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EFFECTS OF SHIP-INDUCED WAVES IN AN  
ICE ENVIRONMENT ON THE  
ST. MARYS RIVER ECOSYSTEM

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## EXECUTIVE SUMMARY

1. On January 25, 1978 representatives of the U.S. Fish and Wildlife Service's Division of Ecological Service (FWS-ES), the Michigan Department of Natural Resources, the Detroit District, U.S. Army Corps of Engineers (COE), and the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), witnessed the ramparting of ice blocks at the shoreline and the hydraulic transport of sediments and aquatic biota onto shore ice, during the passage of an ore carrier off Frechette Point in the St. Marys River; this event generated interest in an investigation of the effects of vessel-induced, under-ice surge and drawdown waves in Great Lakes connecting channels.

2. In response to requests received in November-December 1978 from FWS-ES and the COE, the Great Lakes Fishery Laboratory (GLFL) agreed to undertake a COE-funded study during January-April 1979 at selected sites in the St. Marys River, to provide a base of information for evaluating the effects on fish, fish-food organisms, and fish habitat at those sites of ship-induced, under-ice surge waves, created by vessel passage in the adjacent ice-covered navigation channel.

3. Sampling was conducted at Frechette Point and Six Mile Point in the St. Marys River during January 16-20, February 13-19, and March 13-18, when there was solid ice cover, and during April 17-21, immediately after the solid ice cover had been broken up by heavy vessel traffic.

4. Macroinvertebrates of 56 taxa were identified in 75 Ponar grab samples taken during January-April at Frechette Point and Six Mile Point. The most abundant organisms were Chronomidae (midge larvae), Oligochaeta (worms), and Gastropoda (snails); collectively they comprised about 67% of the total number of organisms collected. Pelecypoda (fingernail clams), Amphipoda (scuds), Polychaeta, Ephemeroptera (mayflies), and Trichoptera (caddisflies) were common in all samples and collectively made up about 22% of the total. The density of benthic macroinvertebrates (all taxa combined) for all stations and months was  $14,125.8/m^2$ .

5. One-way analysis of variance tests (ANOVA) revealed no significant differences ( $\alpha = 0.05$ ) in mean density of benthic macroinvertebrates among samples collected at different locations, water depths, and months, but subsequent evaluation of the power of these tests showed they would have failed to detect a significant difference in mean macroinvertebrate densities between locations 45% of the time, between depths 60% of the time, and between months 70% of the time. An unequivocal demonstration of effect (or no effect) would have required analysis of additional samples to improve the power of the ANOVAs, and probably also the collection of additional unaffected baseline data during a winter or series of winters when there was no vessel traffic in the study area.

6. Drift nets fished 98 times at Frechette Point and Six Mile Point during February 15-April 21, 1979, captured macroinvertebrates representing 24 taxa, aquatic macrophytes (*Elodea*), detritus, planktonic microcrustacea, and fish, but no fish eggs. Examination of the drift net fishing records and the records of vessel passages through the study area revealed a large increase in the amount of drift occurred as a result of vessel passage during the period of solid ice cover. Comparison of drift net catches in March when there was solid ice cover and moderate vessel traffic with catches in April when there was heavy floe ice and very heavy vessel traffic suggests the effect of vessel passage on drift was greater when solid ice cover was present.

7. The significance of the observed vessel-induced drift cannot be demonstrated with the available data. However, the biota and detritus represented in the drift net catches may constitute an energy resource that is important to production in the portion of the St. Marys River covered by the study. The accelerated transport of this material through the system in winter, when production approaches the annual minimum may result in a considerable energy loss to the portion of the system from which the drift material was transported.

8. A total of 132 light penetration measurements made at different levels in the water column suggested that vessel passage increased turbidity; they also suggested that the disturbance of the sediments by vessel passage was less when solid ice cover was replaced with heavy floe ice cover.

9. A total of 73 fish representing seven species was caught in gillnets, fyke nets, and traps during January-April. White suckers dominated the catch (76.7%), followed by burbot and sculpin (each at 6.8%); other species taken included yellow perch, lake herring, northern pike, longnose sucker, and ninespine stickleback. Too few fish were collected to determine if vessel passage affected fish distribution or abundance in the study area; none of the fish we collected exhibited any anatomical anomalies that we could attribute to the effects of vessel passage. The burbot was the only winter-spawning fish that we collected in the study area, and we have no evidence to indicate that burbot spawned in the study area.

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## INTRODUCTION

On January 25, 1978, during an inspection tour of the St. Marys River, representatives of the U.S. Fish and Wildlife Service's Division of Ecological Service (FWS-ES), the Michigan Department of Natural Resources, the Detroit District, U.S. Army Corps of Engineers (COE), and the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), witnessed the passage of the ore carrier, Philip R. Clarke, off Frechette Point. The vessel, which was traveling at a relatively high speed (11.4 mph), produced rather marked effects on the nearshore area including the ramparting of ice blocks at the shoreline and the hydraulic transport of sediments and aquatic biota onto shore ice.

In response to requests received in November-December 1978 from FWS-ES and COE, the FWS Great Lakes Fishery Laboratory (GLFL) agreed to undertake a COE-funded study during January-April 1979 at selected sites in Lake Nicolet, the St. Marys River, to provide a base of information for evaluating the effects on fish, fish-food organisms, and fish habitat at those sites, of ship-induced, under-ice surge waves, created by vessel passage in the adjacent ice-covered navigation channel. The GLFL also agreed to evaluate the information developed during the study, and other relevant materials that were available, and render judgments, where possible, regarding the effect and impact of ship-induced, under-ice surge waves on the above-mentioned biota and their habitat.

As requested by COE, this study was performed under a Memorandum of Agreement between GLFL and the Great Lakes Basin Commission (GLBC), which acted as the Environmental Studies Coordinator for some of the winter navigation-related research funded by COE. According to the terms of the Memorandum of Agreement (GLBC-79-5110) some of the information needed by GLFL to select the study locations and sites and evaluate the impact of vessel passage on the biota of the St. Marys River was to be supplied by CRREL and by Lake Superior State College, who were also under contract to GLBC.

## MATERIALS AND METHODS

The general study area selected by COE (Figure 1) is located in the U.S. waters of the St. Marys River in a 25.7 mile stretch of the river identified by CRREL and COE as an area most likely to experience impact from winter navigation. Two locations within the general study area were identified by CRREL as being particularly susceptible to impact by ship-induced, under-ice surge waves; these locations were Frechette Point and Six Mile Point (Figure 2). A third location, Ninemile Point, (not shown on Figure 1), was also originally identified by CRREL for study. We conducted limited sampling (for macrozoobenthos) at Ninemile Point at the beginning of the study, but because of its inaccessibility (in winter) were forced to exclude that location from further study.

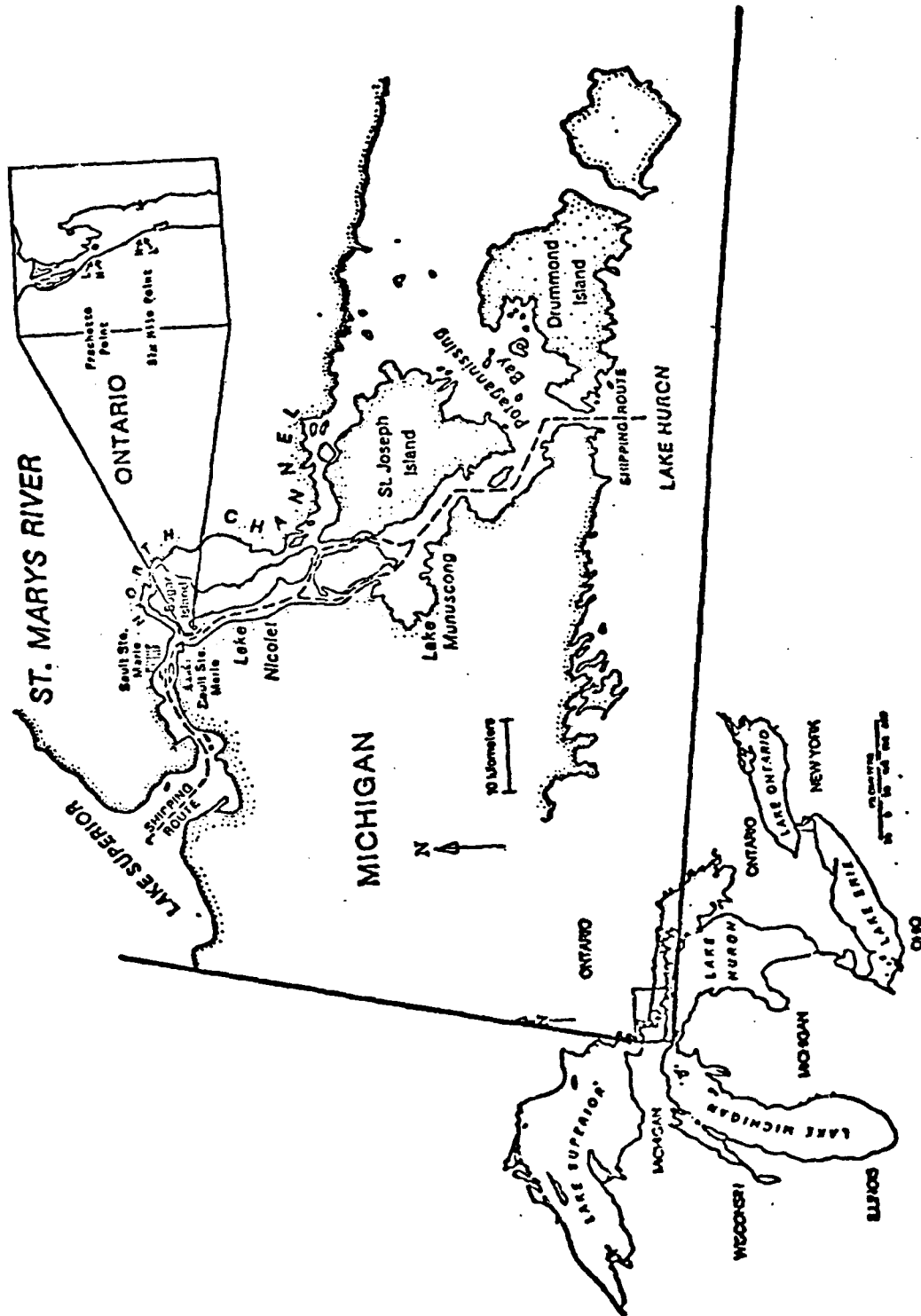
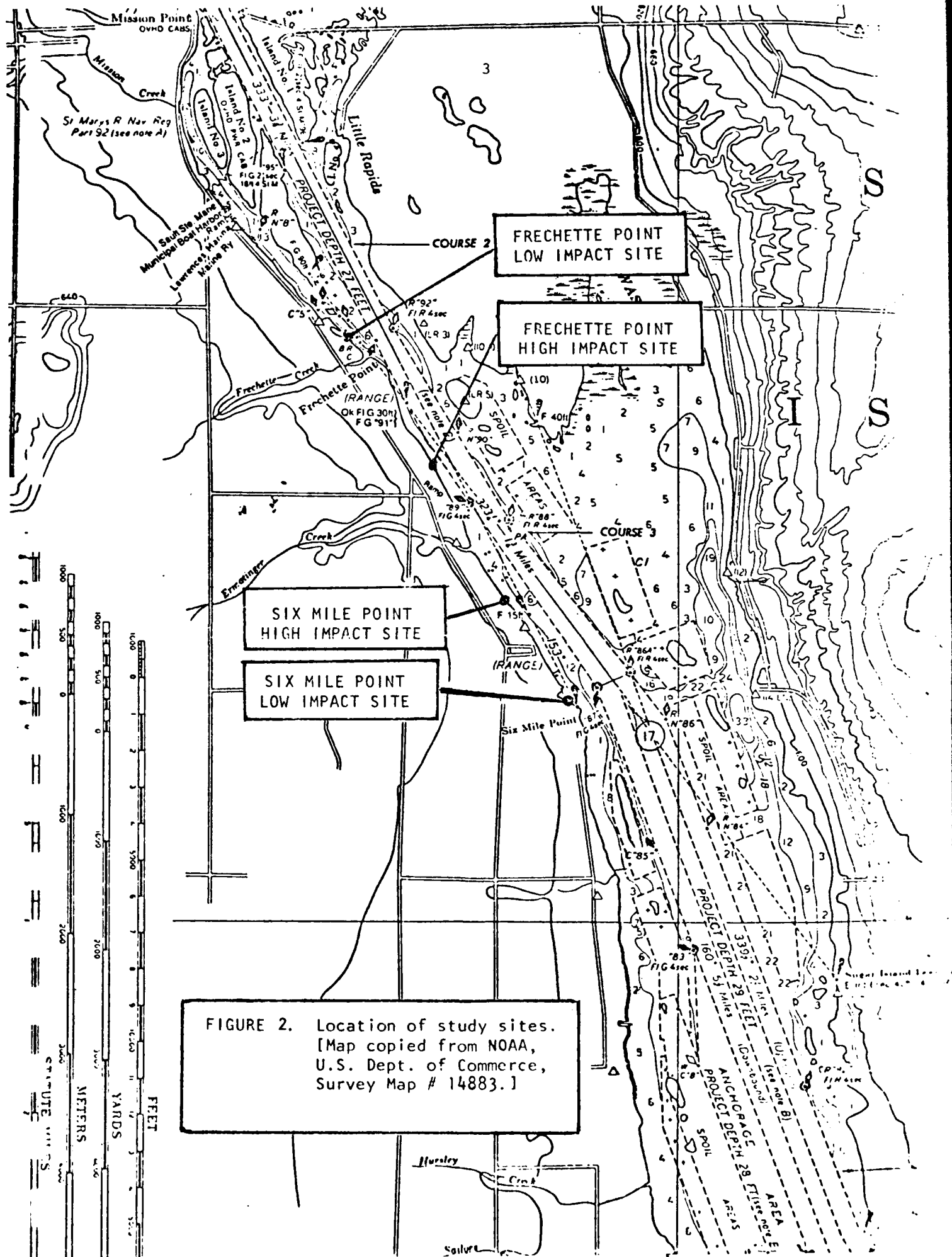


Figure 1. Location of study area.



At each of the two remaining locations we selected two sites for study. One site at a location was selected as a potentially high impact site and the other site as a potentially low impact, (reference or control) site (Figure 2). Selection of the high and low impact sites was based primarily on the relative amount of vessel-induced disturbance of the physical environment observed at the various sites by CRREL and GLFL staff. A total of five sampling stations was established at each site along the 1, 2, and 3 m depth contours (Figure 3).

Benthic macroinvertebrate samples were collected with a Ponar grab at Frechette Point and Six Mile Point. At Frechette Point, three replicate grab samples were taken at each station (1, 2, 3, 4, 6, 7, 8, and 9) at the 1 and 2 m depth contours (Figure 3). At Six Mile Point, three replicate grab samples were taken at each station (11-20) at the 1, 2, and 3 m depth contours (Figure 3). Samples were collected once per month, January-April, at all stations listed above, except station 19, which was not sampled in February because ice cover extended to the bottom. All grab samples were washed through a U.S. standard #30 sieve and the residue was preserved in 10% formalin. Samples were taken to GLFL where the macroinvertebrates were extracted, identified, and enumerated. As set forth in the Memorandum of Agreement, only one sample from each three-replicate set was analyzed; the remaining samples were archived and are available if needed. A total of 30 samples was also taken with a Ponar grab at Ninemile Point in January, before it was decided to eliminate that as a sampling location; all of those samples were also archived.

Drift samples were collected with standard cone-shaped plankton nets, 30 cm in diameter with 580  $\mu$ m mesh. Each net was anchored in the current with a long rod; one end of the rod was driven into the river bottom and the other end extended above the ice surface. The net was fished just above the bottom and was attached to the anchor rod in a manner that allowed the net to swing freely from side to side in response to changes in direction of the current. In February, drift samples were collected at Frechette Point high impact site at four stations (7a, 7b, 7c, and 7d). These stations were located across the 1 m depth contour between stations 7 and 9; they were 57 ft apart and station 7a was 57 ft from station 7. In March and April, drift samples were taken at Frechette Point and Six Mile Point on the 1, 2, and 3 m depth contours at stations 2, 4, 5, 7, 9, 10, 12, 14, 15, 17, 19, and 20. Drift nets were fished 20, 36, and 42 times in February, March, and April respectively for a total of 808 h (average of 8.2 h per set). All material present in each drift net when it was lifted was placed in a sample jar with water and 10% formalin and taken to GLFL for processing and analysis. Each sample was processed by first extracting the macrophytes; the amount of macrophyte material was then quantified by measuring the surface area of each macrophyte fragment with a Li-cor leaf area meter LI-3000.<sup>1/</sup>, using a method developed by GLFL (C. Brown, personal communication).

<sup>1/</sup>Use of trade names or manufacturers' names does not imply Government endorsement of any commercial product.

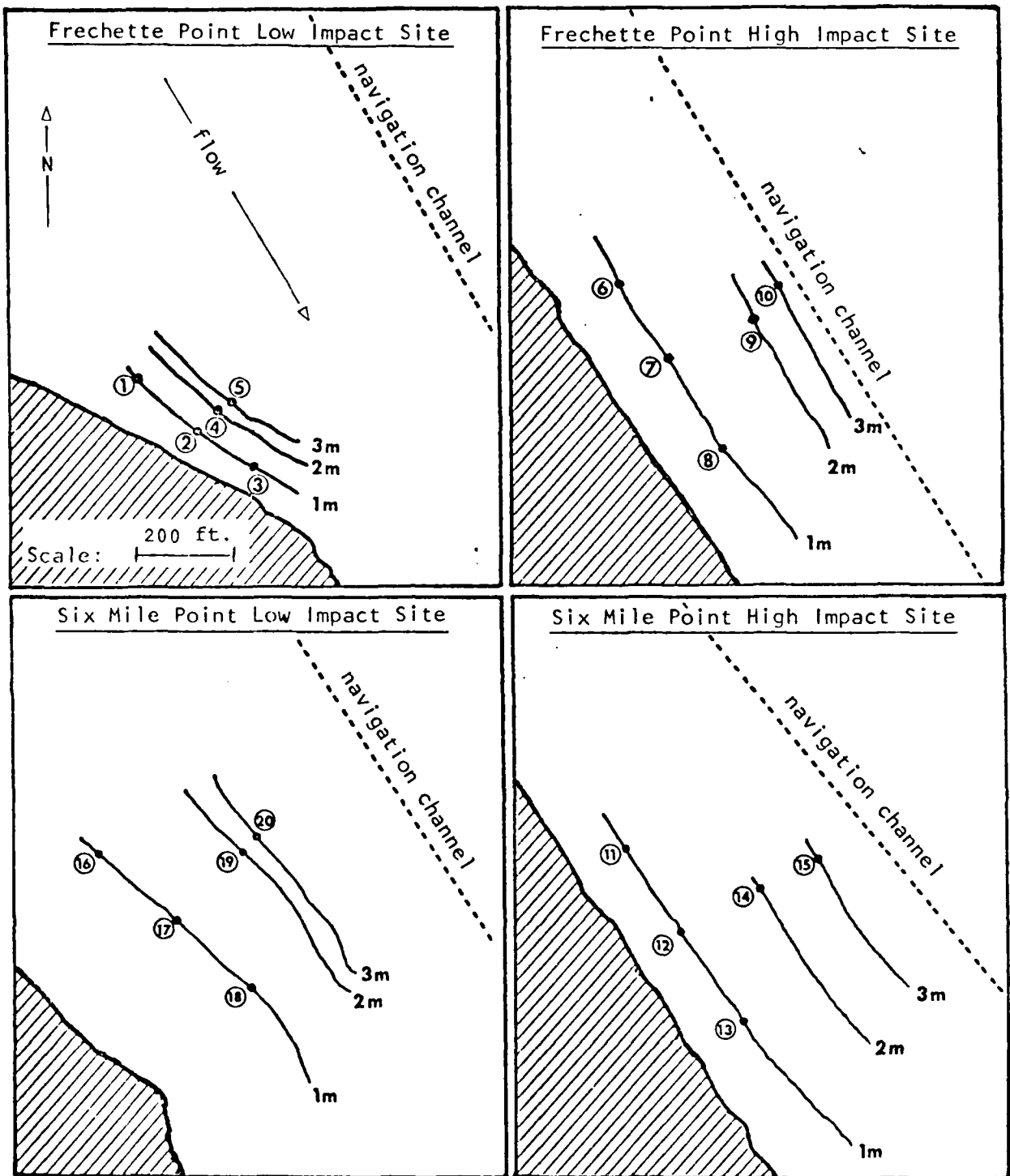


Figure 3. Station locations at Frechette Point and Six Mile Point, January - April 1979.

Macroinvertebrates were then sorted from the samples, identified, and enumerated, using a dissecting microscope. The remaining material in the sample (detritus) was put into suspension by shaking the sample jar, and then decanted onto Whatman #1 filter paper, leaving the heavier inorganic material (sand, etc.) in the jar. The detritus and the filter paper were then dried 4 h at 105°C in a drying oven, and weighed to the nearest milligram on an analytical balance.

Light levels were measured in the water column with a Photomatic Model 1 submersible photometer calibrated in foot-candles. Readings were taken at the surface, middle, and bottom of the water column at stations 2, 4, 5, 7, 9, 10, 12, 14, 15, 17, 19, and 20. A total of 18 light penetration measurements was made in February, 36 in March, and 78 in April.

Sampling for fish was conducted with graded-mesh gillnets (140 ft long and 6 ft high, with 20 ft each of 1, 1-1/2, 2, 2-1/2, 3, 4, and 5 inch mesh, stretched measure), fyke nets (16 ft long x 4 ft diameter pot; 75 ft wings; 1-1/2 inch mesh netting, stretched measure), and small hardware cloth traps (1 ft high x 2 ft wide x 3 ft long covered with 1/4 hardware cloth). Gillnets were set perpendicular to the shoreline on the 2 m depth contour at Six Mile Point (stations 14 and 19) on January 16, and left overnight; strong water currents at Frechette Point prevented us from making similar sets there, on January 16, as planned. When we lifted the gillnets at stations 14 and 19, we found them filled with macrophytes to the point that they could not have fished effectively. Because of the macrophyte clogging problem and the fact that high water velocity prevented their use at Frechette Point, we discontinued the use of gillnets and conducted all subsequent fish sampling with fyke nets and hardware cloth traps. Fyke nets were set overnight at the 2 m depth contour with the wings extending downstream; they were set at stations 9 and 14 in February and at stations 4, 9, 14, and 19 in March and April. A total of two fyke net sets was made in February, seven in March, and eight in April. Hardware cloth traps were set overnight at the 2 m depth contour at station 4; two traps were set in March and two were set again in April. Fish taken from the nets and traps were measured (total length in cm) and returned to the water alive.

## RESULTS AND DISCUSSION

### BENTHIC MACROINVERTEBRATES

Macroinvertebrates of 56 taxa were identified in 75 Ponar grab samples taken during January-April at Frechette Point and Six Mile Point (Table 1, Appendix 1). The taxonomic composition was quite similar at both locations with minor exceptions; eight taxa (mostly caddisflies, Trichoptera), were collected at Frechette Point but not at Six Mile Point, and five taxa were found at Six Mile Point but not at Frechette Point. The aquatic insects (Diptera, Ephemeroptera,

Table 1. Benthic macroinvertebrates collected by Ponar grab from the St. Marys River at Frechette Point and Six Mile Point, January-April 1979. [F = found only at Frechette Point; S = found only at Six Mile Point.]

---

|                            |                             |
|----------------------------|-----------------------------|
| Cnidaria                   | Coleoptera                  |
| <u>Hydra</u>               | <u>Haliphus</u> (S)         |
|                            | Dytiscidae (S)              |
| Tricladida                 | Lepidoptera                 |
| Rhabdocoela                | Neuroptera                  |
| Nematoda                   | <u>Sialis</u> (F)           |
| Nemertinea (S)             | Trichoptera                 |
| Hirudinea                  | <u>Mystacides</u>           |
| Oligochaeta                | <u>Triaenodes</u>           |
| Polychaeta                 | <u>Cheumatopsyche</u>       |
| <u>Manayunkia speciosa</u> | <u>Hydropsyche</u> (F)      |
| Copepoda                   | <u>Neureclipsis</u> (F)     |
| Decapoda                   | <u>Polycentropus</u>        |
| <u>Orconectes</u> (F)      | <u>Agrypnia</u>             |
| Ostracoda                  | <u>Ceraclea</u> (F)         |
|                            | <u>Hydroptila</u>           |
| Amphipoda                  | <u>Setodes</u> (F)          |
| <u>Gammarus</u>            | <u>Molanna</u>              |
| <u>Hyalella azteca</u>     | <u>Oecetis</u>              |
| Isopoda                    | <u>Phylocentropus</u>       |
| <u>Asellus</u>             | <u>Psycomyia</u> (F)        |
| <u>Lirceus</u>             | Hemiptera                   |
| Diptera                    | Corixidae (S)               |
| Tipulidae (S)              | Acarina                     |
| Ceratopogonidae            | <u>Arrenurus</u>            |
| Chironomidae               | Gastropoda                  |
| Empididae                  | <u>Amnicola</u>             |
| Simuliidae                 | <u>Campeloma</u>            |
| Ephemeroptera              | <u>Cyraulius</u>            |
| <u>Ephemerella</u>         | <u>Helisoma</u>             |
| <u>Baetisca</u> (F)        | <u>Lymnaea</u>              |
| <u>Caenis</u>              | <u>Physa</u>                |
| <u>Ephemera</u>            | <u>Valvata sincera</u>      |
| <u>Hexagenia</u>           | <u>V. tricarinata</u>       |
|                            | <u>Goniobasis livescens</u> |
|                            | Pelecypoda                  |
|                            | <u>Pisidium</u>             |
|                            | <u>Sphaerium</u>            |

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Coleoptera, Lepidoptera, Neuroptera, and Trichoptera) displayed the highest diversity with 29 taxa followed by molluscs (Gastropoda and Pelecypoda) with 11 taxa. The taxonomic composition of the macrobenthic fauna in the study area was very similar to that found in studies conducted in the St. Marys River in 1974-75 (Hiltunen 1978a) and in 1979 (Gleason et al. 1979) and also in the lower St. Clair River in 1977 (Hiltunen 1978b).

In the present study the most abundant organisms were Chironomidae (midge larvae), Oligochaeta (worms), and Gastropoda (snails); collectively they comprised about 67% of the total number of organisms collected (Table 2). Pelecypoda (fingernail clams), Amphipoda (scuds), Polychaeta, Ephemeroptera (mayflies), and Trichoptera (caddisflies) were common in all samples and collectively made up 22% of the total. The same major groups (Chironomidae, Oligochaeta, and Gastropoda) were also found to be numerically dominant in other macroinvertebrate studies on the St. Marys River (Hiltunen 1978a and Gleason 1979) and on the Lower St. Clair River (Hiltunen 1978b); there were, however, two exceptions: (1) gastropods (snails) comprised 45.1% of the total number of benthic macroinvertebrates taken by Gleason (1979) in the St. Marys River, while in the present study gastropods (snails) comprised only 19.7% of the total; and (2) Hiltunen (1978b) found that oligochaetes (worms) comprised 49.2-62.6% of the total catch in the lower St. Clair River, whereas in the present study they were only 22.5% of the total.

In the present study, average densities of major groups (Table 2) ranged from 129.1/m<sup>2</sup> for Trichoptera (caddisfly larvae) to 3,517.7/m<sup>2</sup> for Chironomidae (midge larvae). These densities were quite similar to densities reported for the same groups for the St. Marys River and the St. Clair River by Hiltunen (1978a, 1978b). The only major exception was that the average density of oligochaetes in the St. Clair River was higher than that found in the present study, probably because the samples on which the St. Clair River study was based were taken in spring and fall when oligochaete densities are normally higher than in winter.

In the present study, the total density of benthic macroinvertebrates (all taxa combined) for all stations and months was 14,125.8/m<sup>2</sup> (Table 2). Total density was quite variable and ranged from 1,894/m<sup>2</sup> in March at Frechette Point high impact site to 25,174/m<sup>2</sup> in February at Six Mile Point low impact site (Table 3). Densities were higher at the low impact sites in most instances. At the Frechette Point low impact site, densities were higher in all months except February and at the Six Mile Point low impact site they were higher in all months except March (Table 3).

Three, one-way analysis of variance tests (ANOVA) were run to determine if there were significant differences in mean density of benthic macroinvertebrates between locations (all months, depths, and



Table 2. Density (average number/m<sup>2</sup>) and relative abundance (as percent of total) of the major groups of benthic macroinvertebrates collected by Ponar grab from the St. Marys River, January-April 1979. [All stations and months combined.]

|  | Average number/m <sup>2</sup> | Percent of total |
|--|-------------------------------|------------------|
| Chironomidae                           | 3,512.7                       | 24.9             |
| Oligochaeta                            | 3,177.5                       | 22.5             |
| Gastropoda                             | 2,786.0                       | 19.7             |
| Pelecypoda                             | 1,485.5                       | 10.5             |
| Polychaeta                             | 973.1                         | 6.9              |
| Amphipoda                              | 478.8                         | 3.4              |
| Ephemeroptera                          | 158.1                         | 1.1              |
| Trichoptera                            | 129.1                         | 0.9              |
| All others                             | 1,425.0                       | 10.1             |
| Total density for all<br>taxa combined | 14,125.8                      |                  |

Table 3. Density (average number/m<sup>2</sup>) of benthic macroinvertebrates (all taxa combined) taken by Ponar grab from the St. Marys River, January-April 1979.

| Location<br>and site   | Month   |          |        |        |
|------------------------|---------|----------|--------|--------|
|                        | January | February | March  | April  |
| <u>Frechette Point</u> |         |          |        |        |
| High impact site       | 9,824   | 16,404   | 2,726  | 1,894  |
| Low impact site        | 13,222  | 8,688    | 21,621 | 6,999  |
| <u>Six Mile Point</u>  |         |          |        |        |
| High impact site       | 17,611  | 9,000    | 20,032 | 17,962 |
| Low impact site        | 21,313  | 25,174   | 18,689 | 18,801 |

sites were pooled within each location), between the 1 and 2 m depths (all months and sites were pooled within each depth), and among months (all sites and depths pooled within months). These tests were performed on the untransformed raw count data, and because data from benthic macroinvertebrate samples often fit a negative binomial distribution, on the count data transformed (by  $\text{Log}_{10} + 1$ ). The results of all tests were the same: no significant differences ( $\alpha = 0.05$ ) were found. A three-way ANOVA was not run because there were too few degrees of freedom to test the interactions between factors.

The results of the above tests suggest that there was no decrease in density of benthic macroinvertebrates due to vessel-related disturbance throughout the course of the study. However, the results of the ANOVAs could also be interpreted to mean that control or reference sites were affected to the same degree as the high impact sites.

Because sample sizes in our study were small, we tested the power of the ANOVAs to detect significant differences that may have been present. Results of a "power of ANOVA" test (Dixon and Massey 1957) indicated that our sample sizes and sample variances would have failed to detect a significant difference (at  $\alpha = 0.05$ ) in mean macroinvertebrate densities between locations 45% of the time; between depths 60% of the time; and between months 70% of the time. Using methods described by Kastenbaum et al. (1970) to determine sample size requirements for one-way ANOVA, we determined we would have needed 62 samples per location, over 200 samples per depth, and 40 samples per month to detect a significant difference (at  $\alpha = 0.05$ ) in means 80% of the time, or to fail to detect a significant difference in means only 20% of the time. We have 150 archived samples collected during the study that could be processed to satisfy the sample size requirements to conclusively demonstrate whether or not significant differences exist between locations and among months; there is, however, an insufficient number of archived samples to permit us to conclusively demonstrate whether significant differences occur between depths.

Thus, a provisional demonstration of the effect of vessel passage on the density of benthic macroinvertebrates at the study sites will require (1) that we analyze additional samples to improve the power of the ANOVAs and (2) that the ANOVAs show a greater decrease in density at the high impact sites. An unequivocal demonstration of effect (or no effect) would also require additional "unaffected baseline" data collected during a winter or series of winters when there was no vessel traffic through the study area.

## DRIFT

Drift nets were fished at Frechette Point and Six Mile Point during February 15-April 21, 1979, (Appendix 2). Macroinvertebrates representing 24 taxa were identified in the drift net catches (Table 4). All but four of these taxa (Mysis, Chaoborus, Isonychia, and Paraleptophlebia) were also found in the samples taken with a Ponar grab in the study area during January 16-April 20, 1979. The presence of these four taxa in the drift net catches, but not in the Ponar grab samples is not surprising. Mysis and Chaoborus are epibenthic forms often found in the water column; and, in the nymphal form, Isonychia and Paraleptophlebia are free-ranging (nonburrowing, nonclinging) macroinvertebrates of flowing waters that are also frequently found in the water column. The macrophyte catch in drift nets consisted entirely of green, unrooted fragments of Elodea about 0.5-15 cm long. Detritus taken in the drift nets consisted mostly of small fragments of decaying plant matter of terrestrial and aquatic origin; planktonic microcrustacea present in the catch were not identified and were included in the detritus component of catch. One small sculpin (Cottus sp.) was taken in the drift nets; no fish eggs or other fish were present in the drift net catches.

Examination of the drift net fishing records and the records of vessel passages through the study area during February-April (Appendices 2 and 3) revealed that only in February could an unequivocal demonstration be made of the effects of vessel passage on drift net catch. At all other times, vessel traffic in the study area was too frequent to permit the collection of drift net samples that could serve as an unaffected baseline against which the samples reflecting the effect of vessel passage could be compared.

Drift net fishing effort and catch in February at the Frechette Point high impact site summarized in Table 5 reveals a total of 102 net hours of fishing effort expended from 0900-1700 h on February 15 to 1030 h on February 16 yielded catches of macroinvertebrates of 0-0.24 organisms/h, no macrophytes, and small amounts (0.02-0.04 g/h) of detritus (almost entirely microcrustaceans). Catch rose sharply during 1030-1230 h on February 16 to over 10 macroinvertebrates/h, over 7 cm<sup>2</sup> of macrophyte material, and to 0.24 g/h of detritus (mostly decaying plant matter). Catch rose moderately for macroinvertebrates during 1230-1430 h to 14/h, and sharply for macrophytes and detritus to over 16 cm<sup>2</sup>/h and 5.38 g/h respectively. Catch of macroinvertebrates and detritus then declined during 1400-1600 h to about 8 cm<sup>2</sup>/h and to 0.28 g/h respectively (about the same levels recorded during 1030-1230 h), while macrophyte catch continued to rise, to over 42 cm<sup>2</sup>/h.

Table 4. Macroinvertebrates collected in drift nets fished at Frechette Point and Six Mile Point in the St. Marys River, February 15-April 21, 1979. [a=Not found in Ponar grab sample.]

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|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Cnidaria                          | Ephemeroptera                        |
| <u>Hydra</u>                      | <u>Ephemera</u>                      |
|                                   | <u>Hexagenia</u>                     |
| Hirudinea                         | <u>Isonychia</u> <sup>a</sup>        |
|                                   | <u>Baetisca</u>                      |
| Oligochaeta                       | <u>Caenis</u>                        |
|                                   | <u>Paraleptophlebia</u> <sup>a</sup> |
| Amphipoda                         | Trichoptera                          |
| <u>Gammarus</u>                   | <u>Mystacides</u>                    |
| Isopoda                           | <u>Agrypnia</u>                      |
| <u>Lirceus</u>                    |                                      |
| Mysidacea                         | Hemiptera                            |
| <u>Mysis relicta</u> <sup>a</sup> | Corixidae                            |
|                                   | Acarina                              |
| Diptera                           | Gastropoda                           |
| <u>Chaoborus</u> <sup>a</sup>     | <u>Amnicola</u>                      |
| Chrionomidae                      | <u>Campeloma</u>                     |
| Simulidae                         | <u>Gyraulus</u>                      |
|                                   | <u>Physa</u>                         |
|                                   | <u>Valvata sincera</u>               |

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Table 5. Drift net fishing effort and catch at Frechette Point high impact site (station 7), February 15-16, 1979. [Each catch is an average value representing samples collected in four nets fished simultaneously on the 1 m depth contour.]

| Effort and catch                                 | Dates and hours nets fished |            |           |           |           |
|--|-----------------------------|------------|-----------|-----------|-----------|
|  | Feb. 15                     | Feb. 15-16 | Feb. 16   |           |           |
|  | 0900-1700                   | 1700-1030  | 1030-1230 | 1230-1400 | 1400-1600 |
| Effort (number of net-hours fished)              | 32                          | 70         | 8         | 6         | 8         |
| Catch (per net-hour)                             |                             |            |           |           |           |
| Macroinvertebrates (number)                      | 0                           | 0.2        | 10.9      | 14.0      | 8.4       |
| Macrophytes (cm <sup>2</sup> plant surface area) | 0                           | 0          | 7.33      | 26.67     | 42.23     |
| Detritus (g)                                     | 0.02                        | 0.04       | 0.24      | 5.38      | 0.28      |

Information on vessel movement through the study area obtained from the U.S. Coast Guard (Appendix 3), Alger (1979), Gleason et al. (1979), and on-site observations by GLFL staff collectively revealed the following: no vessels passed the study site on February 13-15; the U.S. Coast Guard cutter, Mackinaw, passed the Frechette Point high impact site on February 16, downbound at 1015 h, and passed again, upbound at about 1030 h, followed by the P.R. Clarke at 1250 h, the C.J. Callaway at 1304 h, and the J.C. Munson at 1328 h. Apparently the low catches in drift nets lifted at 1700 h on February 15 and at 1030 h on February 16 can be taken as the unaffected baseline condition, because no vessels passed the site during February 13 and 14 (no earlier records of vessel passage in February were examined), or on February 15. The Mackinaw passed the site downbound at 1015 h and, although its passage could have been expected to have increased the catch in the nets lifted at 1030 h, the data of Table 5 indicates it did so only minimally, if at all.

On its return trip upbound past the study site at 1030 h, however, the Mackinaw seems to have caused a large increase in catch of all of the components of drift in samples covering the period 1130-1230 h. An entirely satisfactory explanation for this difference in catch resulting from the downbound and upbound passages cannot be made with the available data. No records of vertical ice displacement (a measurement of under-ice disturbance that could have increased drift catches) were made during the Mackinaw's downbound passage. Gleason et al. (1979) provide a record for the upbound passage of the Mackinaw at 1030 h which indicates that the maximum vertical ice displacement was small (11.2 cm) relative to those caused by the three vessels that passed upbound at 1250-1328 h (60-64 cm). The results of Alger's (1979) study reveal that a vessel moving downstream at a given speed will cause considerably less vertical ice displacement and vertical sediment suspension than the same vessel passing upstream at the same speed; however, application of this generalization is confounded by the fact that the Mackinaw was backing upstream when it passed the study site at 1030 h. Nevertheless, the large increase in catch in the drift nets during 1030-1230 h on February 16 can be attributed to the disturbance (changes in current velocity and direction and the vertical displacement of ice and bottom sediments as described by Alger 1979, and Gleason et al. 1979) caused by the Mackinaw passing the study site and also to the disturbance caused upstream from the study site by the continued upbound passage of the Mackinaw. The large catches in drift nets lifted at 1400 h can be attributed to the passage of the P.R. Clarke, the C.J. Callaway, and the J.C. Munson at 1250, 1304, and 1328 h, respectively, and to the disturbance caused upstream of the study site by the continued upbound passage of those vessels and the Mackinaw. No vessels passed the study site during 1400-1600 h on February 16 and the relatively high catches during that period reflect only the disturbances caused at the site by the earlier passage of vessels during 1030-1328 h and the continuing disturbances upstream caused by their upbound passage.

The increase in catch of macrophytes during 1400-1600 h (over that during 1230-1400 h) while catches of macroinvertebrates and detritus decreased can be explained in part on the basis of the buoyancy of these three components of the drift net catch. Our observations of the macrophyte fragments in the water-filled sample jars revealed that these fragments were relatively buoyant, suggesting that those fragments dislodged from deposits in low current areas or broken from rooted stems by vessel-caused disturbance would remain in the water column long enough to be transported considerable distances downstream by under-ice river currents. The buoyancy of the macroinvertebrates and detritus in the sample jars was low compared to that of the macrophytes suggesting that the catch of macroinvertebrates and detritus during 1400-1600 h should indeed have decreased faster than that of the macrophytes. Bottom-seeking responses of benthic macroinvertebrates would also reduce their presence in the water column and their vulnerability to capture in the drift nets more quickly than would the passive sinking of the macrophytes and perhaps even the detritus.

Thus, the high drift catches shown in Table 5 during 1030-1600 h on February 16 can clearly be attributed to physical disturbances of the benthic and epibenthic habitat caused by vessels passing the study site.

Comparison of the average catches in drift nets for Frechette Point and Six Mile Point and for the high and low impact sites during March and April (only the Frechette high impact site was sampled in February) revealed differences which are difficult to interpret unequivocally, but which suggest areas which may require additional study. Moderately large differences were evident between the catches of macroinvertebrates at Frechette Point and Six Mile Point. Unweighted average catches based on pooled values from Table 6 for high and low impact sites for March and April at each location, and calculated as follows, showed the macroinvertebrate catch at Frechette Point (0.18 organisms/h) was about twice as large as that at Six Mile Point (0.09/h):

$$\text{Frechette Point: } \frac{0.04 + 0.44 + 0.01 + 0.21}{4} = 0.18$$

$$\text{Six Mile Point: } \frac{0.01 + 0.09 + 0 + 0.25}{4} = 0.09$$

Similar calculations revealed the macrophyte component of catch at the Frechette Point location (1.55 cm<sup>2</sup>/h) was about half that at Six Mile Point (3.11 cm<sup>2</sup>/h) and that the detritus component of catch at Frechette Point (0.23 g/h) was slightly less than twice that at Six Mile Point (0.14 g/h). Catches in drift nets at high impact sites also differed markedly from those at the low impact sites. Unweighted average catches based on pooled values from Table 6 for the two



Table 6. Drift net catches, March 13-April 21, 1979.

| Sampling period | Location and site      | Average catch per hour       |                                |              |
|-----------------|------------------------|------------------------------|--------------------------------|--------------|
|                 |                        | Macro-invertebrates (number) | Macrophytes (cm <sup>2</sup> ) | Detritus (g) |
| March 13-18     | <u>Frechette Point</u> |                              |                                |              |
|                 | High impact            | 0.04                         | 5.12                           | 0.25         |
|                 | Low impact             | 0.44                         | 0.58                           | 0.06         |
|                 | <u>Six Mile Point</u>  |                              |                                |              |
|                 | High impact            | 0.01                         | 3.46                           | 0.01         |
|                 | Low impact             | 0.09                         | 1.14                           | 0.05         |
| April 20-21     | <u>Frechette Point</u> |                              |                                |              |
|                 | High impact            | 0.01                         | 0.13                           | 0.26         |
|                 | Low impact             | 0.21                         | 0.36                           | 0.36         |
|                 | <u>Six Mile Point</u>  |                              |                                |              |
|                 | High impact            | 0                            | 6.97                           | 0.47         |
|                 | Low impact             | 0.25                         | 0.88                           | 0.04         |

locations for March and April showed the macroinvertebrate catch at the high impact sites (0.02 organisms/h) was about 1/10 that at the low impact sites (0.23 organisms/h); macrophyte catch at the high impact site (3.92 cm<sup>2</sup>/h) was about 5 times that at the low impact site (0.74 cm<sup>2</sup>/h); and detritus catch at the high impact site (0.25 g/h) was about twice that at the low impact site (0.13 g/h).

Because benthic macroinvertebrates transported into the water column by vessel-induced disturbance would (for the reasons mentioned earlier) tend to settle to the bottom relatively quickly where they would not be susceptible to capture in drift nets, the observed differences in catch of benthic macroinvertebrates in drift nets at the various locations and sites could be expected to be positively correlated with their densities in the bottom populations in the immediate vicinity. The higher catch of macroinvertebrates in drift nets at the low impact sites than at the high impact sites during March-April is consistent with the higher densities of macroinvertebrates in the bottom populations at the low impact sites than at the high impact sites as shown by the Ponar grab samples of Table 3 for March-April; the unweighted average densities calculated from Table 3 for March-April are 15,027/m<sup>2</sup> for the low impact sites and 10,653/m<sup>2</sup> for the high impact sites. A similar correlation was expected between drift net catch and Ponar grab samples at Frechette Point and Six Mile Point, but was not found; the densities calculated from Table 3 were 8,310/m<sup>2</sup> and 18,871/m<sup>2</sup> respectively for the two locations. The available data do not permit explanation of these inconsistent results.

The almost complete absence of information on the source populations of the two other major components of catch in the drift nets prevents interpretation beyond that given above for the February 15-16 catches; the locations of stands of macrophytes and deposits of detritus in and upstream of the study area are not known and could not be readily determined during the period of ice cover when this study was conducted.

Comparison of the drift net catches in March with those in April permit an examination of the effect on drift of vessel passage during and after the period of solid ice cover. Catches in drift nets in March differed little from those in April. The unweighted average catches of macroinvertebrates in March and April, based on pooled values from Table 6 for all locations and sites by month calculated as follows were virtually identical:

$$\text{March: } \frac{0.04 + 0.44 + 0.01 + 0.09}{4} = 0.15$$

$$\text{April: } \frac{0.01 + 0.21 + 0 + 0.25}{4} = 0.12$$

Unweighted average catches of macrophytes in March and April were also similar (2.57 and 2.08 cm<sup>2</sup>/h, respectively), and the detritus catch in March (0.20 g/h) was almost identical to that in April (0.18 g/h).

In one respect, the lack of an apparent difference between drift catches in March and April (Table 6) is not surprising. Although the solid ice cover present in March broke up (apparently in response to icebreaker activity and heavy vessel traffic, rather than ice-melt and heavy runoff) just before sampling was conducted in April, the limnological conditions that prevailed on March 13-18 and could have influenced drift catch probably differed little from those on April 20-21. Water temperature changed little during March and April, because the river had solid ice cover in March and a heavy cover of floe ice in April. River discharge (flow) was also closely similar in both months; average discharge from Lake Superior was 1903 m<sup>3</sup>/s in March and 1893 m<sup>3</sup>/s in April (Alger 1979). Perhaps what is surprising is that the catch in March is so similar to that in April despite the heavier vessel traffic that occurred during the April sampling period (Appendix 3). A total of eight vessels passed through the study area on March 11-18, four of these during March 13-14 and 17-18, while drift nets were being fished (Appendices 2 and 3). In contrast, a total of 30 vessels passed through the study area on April 19-21; 22 of these passed on April 20-21, while drift nets were being fished.

The lack of larger catches in the drift nets in April when vessel traffic was considerably heavier suggests that the effect on drift net catch of vessel passage through the study area was greater when there was solid ice cover than when there was only floe ice cover.

The significance of the observed vessel-induced drift cannot be demonstrated with the available data. However, the biota and detritus represented in our drift net catches may constitute an energy resource that is important to production in the portion of the St. Marys River covered by our study. The accelerated transport of this material through the system in winter, when production probably reaches the annual minimum, may therefore result in a considerable net energy loss to that portion of the system from which the material is transported.

#### TURBIDITY

Light levels were measured at the surface, middle, and bottom of the water column to determine if vessel passage increased turbidity, as shown by a decrease in light penetration. Because light penetration varied unpredictably (apparently as a result of differences in ice thickness and condition) we calculated light penetration as follows, using the light measurements at the middle and bottom of the water column:

$$\frac{\text{ft-candles at bottom}}{\text{ft-candles at middle}} \times 100 = \% \text{ of light reaching bottom from middle}$$

The results indicate that light penetration at stations on the 1 m depth contour was generally lower in February than in March or April (Table 7). One exception occurred in February at station 7a at 1330-1340 when 37.5% of the light that reached the middle of the water column also reached the bottom. We also observed that light penetration in March and April was greater at the low impact sites (Table 7). The same trends observed at the stations on the 1 m depth contour also occurred at the stations on the 2 and 3 m depth contours.

Vessel passage occurred either during or just prior to all light level measurements except those taken in March (Appendices 3 and 4); therefore, we used March data as the unaffected baseline from which to measure the effects of vessel passage. With the exception of one measurement at station 7a in February, light penetration was lower in February than in March (Table 7), indicating vessel passage may have caused the decrease in light penetration observed in February. Light penetration was greater in April than in March in several instances (Table 7) in spite of heavier vessel traffic in April (Appendix 3). The breakup of solid ice cover in April may have reduced the vessel-induced disturbance of bottom sediments and permitted greater light penetration despite heavier vessel traffic.

The available data suggest that vessel passage caused decreases in light penetration (an increase in turbidity) under ice cover and that the greater decreases were caused at the high impact sites. Additional unaffected baseline data are needed for a conclusive demonstration of the effects of vessel passage on light penetration under ice cover in the study area.

### FISH

A total of 73 fish representing seven species was caught by all gear during February-April (Table 8; Appendix 5). White suckers dominated the catch (76.7%), followed by burbot and sculpin (each at 6.8%); other species included yellow perch, lake herring, northern pike, longnose sucker, and ninespine stickleback. Gillnets fished twice in February caught one white sucker, and hardware cloth traps fished twice in March and twice in April caught a total of five sculpins and one ninespine stickleback. Fyke nets caught 6 white suckers (average of 3 fish/net night) in February; 11 white suckers and 1 burbot (average of 1.7 fish/net night) in March; and 38 white suckers, 4 burbot, 2 lake herring, 2 yellow perch, 1 longnose sucker, and 1 northern pike (average of 6 fish/net night) in April. The lower fish catch in February and March indicates few fish were in the study area or that the fish in the area moved little at that time. The higher catch in April may have been due to ice breakup and early spawning-related movements in the study area.

Too few fish were collected to determine if vessel passage affected fish distribution or abundance in the study area; none of the fish we collected exhibited any anatomical anomalies that we could

Table 7. Percent light penetration from the middle to bottom depths at 1 m (depth) stations [under ice cover] in the St. Marys River, February 16-April 21, 1979.

| Site                                   | Station | Date and time of measurement |               |      |      |      |      |      |
|--|---------|------------------------------|---------------|------|------|------|------|------|
|  |         | 2/16                         | 2/16          | 3/18 | 4/21 | 4/21 | 4/21 | 4/21 |
| Frechette<br>Point High<br>Impact Site |         | 1310-<br>1320                | 1330-<br>1340 | 1445 |      |      |      |      |
|  | 7a      | 15.7                         | 37.5          |      |      |      |      |      |
|  | 7c      | 14.5                         | 21.6          |      |      |      |      |      |
|  | 7d      | 17.5                         | 20.2          |      |      |      |      |      |
|  | 7       |                              |               | 35.3 |      |      |      |      |
| Frechette<br>Point Low<br>Impact Site  |         |                              |               | 1500 | 1100 | 1300 | 1500 | 1700 |
|  | 2       |                              |               | 46.4 | 73.1 | 59.2 | 50.0 | 53.8 |
| Six Mile<br>Point High<br>Impact Site  |         |                              |               | 1415 | 1600 | 1800 |      |      |
|  | 12      |                              |               | 25.6 | 14.7 | 20.5 |      |      |
| Six Mile<br>Point Low<br>Impact Site   |         |                              |               | 1400 | 1630 | 1830 |      |      |
|  | 17      |                              |               | 33.3 | 22.6 | 75.0 |      |      |

Table 8. Total number and relative abundance (expressed as percent of total) of all species of fish collected by all gear at Frechette Point and Six Mile Point, January 16-April 21, 1979.

| Common name           | Scientific name              | Number   | Percent of total |
|-----------------------|------------------------------|----------|------------------|
| White sucker          | <u>Catostomus commersoni</u> | 56       | 76.8             |
| Burbot                | <u>Lota lota</u>             | 5        | 6.8              |
| Sculpin               | <u>Cottus sp.</u>            | 5        | 6.8              |
| Yellow perch          | <u>Perca flavescens</u>      | 2        | 2.7              |
| Lake herring          | <u>Coregonus artedii</u>     | 2        | 2.7              |
| Northern pike         | <u>Esox lucius</u>           | 1        | 1.4              |
| Longnose sucker       | <u>Catostomus catostomus</u> | 1        | 1.4              |
| Ninespine stickleback | <u>Pungitius pungitius</u>   | <u>1</u> | <u>1.4</u>       |
| Total catch           |                              | 73       | 100.0            |

attribute to the effects of vessel passage. The burbot was the only winter-spawning fish that we collected in the study area, and we have no evidence that they spawned in the study area; as mentioned above, no fish eggs of any kind were collected in the drift nets.

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Appendix 1. Estimates of benthic macroinvertebrate density from Ponar grab samples taken at Frechette Point and Six Mile Point in the St. Marys River, January 16-April 20, 1979.

MACROINVERTS OF THE ST. MARYS RIVER

STATION 01

| DATE    | DEPTH (M.) | TAXON               | 25 | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|----|-----------------|-------------------------|
| 1/20/79 | 1.0        | CHIDARIA            |    |                 |                         |
|         |            | HYDRA               |    | 96              | 1983                    |
|         |            | ALL CHIDARIA        |    |                 | 1983                    |
|         |            | HEMATODA            |    | 13              | 269                     |
|         |            | HIRUDINIA           |    | 7               | 145                     |
|         |            | OLIGOCHAETA         |    | 456             | 9421                    |
|         |            | POLYCHAETA          |    |                 |                         |
|         |            | MANAYUNKIA SPECIOSA |    | 113             | 2335                    |
|         |            | ALL POLYCHAETA      |    |                 | 2335                    |
|         |            | AMPHIPODA           |    |                 |                         |
|         |            | HYALELLA            |    | 33              | 682                     |
|         |            | ALL AMPHIPODA       |    |                 | 682                     |
|         |            | ISOPODA             |    |                 |                         |
|         |            | ASELLUS             |    | 15              |                         |
|         |            | LIRCEUS             |    | 2               |                         |
|         |            | ALL ISOPODA         |    |                 | 351                     |
|         |            | DIPTERA             |    |                 |                         |
|         |            | CERATOPOGONIDAE     |    | 8               |                         |
|         |            | CHIRONOMIDAE        |    | 231             | 4772                    |
|         |            | EMPIDIDAE           |    | 5               |                         |
|         |            | ALL DIPTERA         |    |                 | 5041                    |
|         |            | EPHEMEROPTERA       |    |                 |                         |
|         |            | EPHEMERIDAE         |    |                 |                         |
|         |            | EPHEMERA            |    | 2               |                         |
|         |            | HEXAGENIA           |    | 1               |                         |
|         |            | ALL EPHEMEROPTERA   |    |                 | 62                      |
|         |            | LEPIDOPTERA         |    | 2               | 41                      |
|         |            | TRICHOPTERA         |    |                 |                         |
|         |            | HYSTACIDES          |    | 1               |                         |
|         |            | NEURECLIPSIS        |    | 2               |                         |
|         |            | POLYCENTROPUS       |    | 4               |                         |
|         |            | ALL TRICHOPTERA     |    |                 | 145                     |
|         |            | ACARINA             |    | 1               | 21                      |
|         |            | GASTROPODA          |    |                 |                         |
|         |            | AMNICOLA            |    | 102             |                         |
|         |            | GYRAULUS            |    | 14              |                         |
|         |            | PELISOMA            |    | 3               |                         |
|         |            | PHYSA               |    | 2               |                         |
|         |            | VALVATA SINCERA     |    | 4               |                         |
|         |            | VALVATA TRICARINATA |    | 24              |                         |
|         |            | ALL GASTROPODA      |    |                 | 3078                    |
|         |            | PELECYPODA          |    |                 |                         |
|         |            | PISIDIUM            |    | 10              | 207                     |
|         |            | ALL PELECYPODA      |    |                 | 207                     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 02

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/20/79 | 1.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 21          |
|         |           | NEMATODA            | 9               | 186         |
|         |           | HIRUDINEA           | 1               | 21          |
|         |           | OLIGOCHAETA         | 89              | 1839        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 11              | 227         |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 227         |
|         |           | OSTRACODA           | 2               | 41          |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 2               | 41          |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 41          |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 3               |             |
|         |           | -----               |                 |             |
|         |           | LIRCEUS             | 1               |             |
|         |           | -----               |                 |             |
|         |           | ALL ISOPODA         |                 | 83          |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 1               |             |
|         |           | CHIRONOMIDAE        | 75              | 1549        |
|         |           | EMBIIDIDAE          | 6               |             |
|         |           | ALL DIPTERA         |                 | 1735        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 1               |             |
|         |           | -----               |                 |             |
|         |           | HEXAGENIA           | 3               |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 83          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | HYDROPSYCHIDAE      | 1               | 21          |
|         |           | ALL TRICHOPTERA     |                 | 21          |
|         |           | ACARINA             | 3               | 62          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 23              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 1               |             |
|         |           | -----               |                 |             |
|         |           | LYMNAEA             | 1               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCERA     | 63              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICARIATA  | 8               |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 1983        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 23              | 475         |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 475         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 03

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 1/20/79 | 1.0        | RHABDOCELLA         | 1               | 21          |
|         |            | ULIGOCHAETA         | 39              | 806         |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 2               | 41          |
|         |            | -----               |                 |             |
|         |            | ALL POLYCHAETA      |                 | 41          |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 2               | 41          |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 41          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 2               |             |
|         |            | CHIRONOMIDAE        | 42              | 868         |
|         |            | ALL DIPTERA         |                 | 909         |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 1               |             |
|         |            | -----               |                 |             |
|         |            | HEXAGENIA           | 1               |             |
|         |            | -----               |                 |             |
|         |            | ALL EPHEMEROPTERA   |                 | 41          |
|         |            | TRICHOPTERA         |                 |             |
|         |            | PSYCHOMYIA          | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL TRICHOPTERA     |                 | 21          |
|         |            | ACARINA             | 1               | 21          |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 19              |             |
|         |            | -----               |                 |             |
|         |            | GYRAULUS            | 2               |             |
|         |            | -----               |                 |             |
|         |            | LYMNAEA             | 2               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINCERA     | 5               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICARINATA | 19              |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 971         |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 13              | 269         |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 269         |

## ACCRETION OF THE ST. MARYS RIVER

28

STATION: C4

| DATE    | DEPTH (M) | TAXA                  | GRAB COUNTS | MEAN NO./M <sup>2</sup> |
|---------|-----------|-----------------------|-------------|-------------------------|
| 1/20/79 | 2.0       | CNIDARIA              |             |                         |
|         |           | HYDRA                 | 399         | 8243                    |
|         |           | ALL CNIDARIA          |             | 8243                    |
|         |           | RHABDOCELA            | 1           | 21                      |
|         |           | NEMATODA              | 4           | 83                      |
|         |           | HIRUDINEA             | 1           | 21                      |
|         |           | OLIGOCHAETA           | 111         | 2293                    |
|         |           | POLYCHAETA            |             |                         |
|         |           | MANAYUNKIA SPECIOSA   | 2           | 41                      |
|         |           | ALL POLYCHAETA        |             | 41                      |
|         |           | OSTRACODA             | 2           | 41                      |
|         |           | AMPHIPODA             |             |                         |
|         |           | HYALELLA              | 15          | 310                     |
|         |           | ALL AMPHIPODA         |             | 310                     |
|         |           | ISOPODA               |             |                         |
|         |           | ASELLUS               | 2           |                         |
|         |           | LIPCEUS               | 10          |                         |
|         |           | ALL ISOPODA           |             | 248                     |
|         |           | DIPTERA               |             |                         |
|         |           | CERATOPOGONIDAE       | 2           |                         |
|         |           | CHIRONOMIDAE          | 170         | 3512                    |
|         |           | EMPHIDIDAE            | 8           |                         |
|         |           | SIMULIIDAE            | 4           |                         |
|         |           | ALL DIPTERA           |             | 3801                    |
|         |           | EPHEMEROPTERA         |             |                         |
|         |           | EPHEMERIDAE           |             |                         |
|         |           | EPHEMERA              | 1           |                         |
|         |           | HEXAGENIA             | 3           |                         |
|         |           | ALL EPHEMEROPTERA     |             | 83                      |
|         |           | TRICHOPTERA           |             |                         |
|         |           | AGRYPIA               | 1           |                         |
|         |           | CERATOLEA             | 1           |                         |
|         |           | CHEUKATOPSYCHE        | 2           |                         |
|         |           | HYDROPSYCHE           | 1           |                         |
|         |           | MYSTACIDUS            | 1           |                         |
|         |           | NEURECLIPSIS          | 2           |                         |
|         |           | POLYCENTROPUS         | 3           |                         |
|         |           | ALL TRICHOPTERA       |             | 227                     |
|         |           | ACARINA               | 3           | 62                      |
|         |           | GASTROPODA            |             |                         |
|         |           | AMPHICOLA             | 54          |                         |
|         |           | CONIOSTOMUS LIVESCENS | 1           |                         |
|         |           | GYRATILUS             | 6           |                         |
|         |           | PELICOLA              | 8           |                         |
|         |           | LYMBALA               | 1           |                         |
|         |           | PHYSA                 | 11          |                         |
|         |           | VALVATA SINGERA       | 47          |                         |
|         |           | VALVATA TRICAPILLATA  | 6           |                         |
|         |           | ALL GASTROPODA        |             | 2768                    |
|         |           | PELECYPODA            |             |                         |
|         |           | PISIDIUM              | 44          | 909                     |
|         |           | ALL PELECYPODA        |             | 909                     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 06

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|-----------|---------------------|-----------------|-------------------------|
| 1/20/79 | 1.0       | NEMATODA            | 7               | 145                     |
|         |           | HIRUDINEA           | 2               | 41                      |
|         |           | OLIGOCHAETA         | 59              | 1219                    |
|         |           | POLYCHAETA          |                 |                         |
|         |           | MANAYUNKIA SPECIOSA | 16              | 331                     |
|         |           | -----               |                 |                         |
|         |           | ALL POLYCHAETA      |                 | 331                     |
|         |           | OSTRACODA           | 2               | 41                      |
|         |           | AMPHIPODA           |                 |                         |
|         |           | GAMMARUS            | 4               |                         |
|         |           | -----               |                 |                         |
|         |           | HYALELLA            | 2               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL AMPHIPODA       |                 | 124                     |
|         |           | ISOPODA             |                 |                         |
|         |           | LIRCEUS             | 1               | 21                      |
|         |           | -----               |                 |                         |
|         |           | ALL ISOPODA         |                 | 21                      |
|         |           | DIPTERA             |                 |                         |
|         |           | CERATOPOGONIDAE     | 2               |                         |
|         |           | CHIRONOMIDAE        | 145             | 2996                    |
|         |           | EMPIDIDAE           | 2               |                         |
|         |           | ALL DIPTERA         |                 | 3078                    |
|         |           | EPHEMEROPTERA       |                 |                         |
|         |           | EPHEMERIDAE         |                 |                         |
|         |           | HEXAGENIA           | 4               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL EPHEMEROPTERA   |                 | 83                      |
|         |           | TRICHOPTERA         |                 |                         |
|         |           | HYDROPSYCHIDAE      | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | HYSTACIDES          | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | POLYCENTROPUS       | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL TRICHOPTERA     |                 | 62                      |
|         |           | ACARINA             | 2               | 41                      |
|         |           | GASTROPODA          |                 |                         |
|         |           | AMNICOLA            | 16              |                         |
|         |           | -----               |                 |                         |
|         |           | GYRAULUS            | 15              |                         |
|         |           | -----               |                 |                         |
|         |           | LYMNAEA             | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA SINCERA     | 25              |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA TRICAMINATA | 42              |                         |
|         |           | -----               |                 |                         |
|         |           | ALL GASTROPODA      |                 | 2045                    |
|         |           | PELECYPODA          |                 |                         |
|         |           | PISIDIUM            | 11              |                         |
|         |           | -----               |                 |                         |
|         |           | SPHACELIUM          | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL PELECYPODA      |                 | 248                     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 07

| DATE    | DEPTH (M.) | TAXON   | --GRAB COUNTS-- | MEAN NO./12  |
|---------|------------|---|-----------------|--------------|
| 1/20/79 | 1.0        | Cnidaria<br>Hydra   | 9               | 186          |
|         |            | ALL CNIDARIA  |                 | 186          |
|         |            | NEMATODA  | 14              | 289          |
|         |            | HIRUDINEA   | 1               | 21           |
|         |            | OLIGOCHAETA   | 51              | 1054         |
|         |            | POLYCHAETA<br>MARATYLLIDIA SPECIOSA                       | 16              | 331          |
|         |            | ALL POLYCHAETA  |                 | 331          |
|         |            | AMPHIPODA<br>Gammarus                                     | 2               |              |
|         |            | HYALELLA  | 12              |              |
|         |            | ALL AMPHIPODA   |                 | 289          |
|         |            | ISOPODA<br>Asellus  | 1               | 21           |
|         |            | ALL ISOPODA   |                 | 21           |
|         |            | DIPTERA<br>CERATOPOGONIDAE<br>CHIRONOMIDAE<br>ALL DIPTERA | 2<br>230        | 4752<br>4793 |
|         |            | EPHEMEROPTERA<br>EPHEMERIDAE<br>HEXAGENIA                 | 2               |              |
|         |            | ALL EPHEMEROPTERA   |                 | 83           |
|         |            | TRICHOPTERA<br>HYDROPTILIDAE                              | 2               |              |
|         |            | MYSTACIDES  | 2               |              |
|         |            | ALL TRICHOPTERA   |                 | 83           |
|         |            | ACARINA   | 6               | 124          |
|         |            | GASTROPODA<br>AMNICULA                                    | 46              |              |
|         |            | GYRAULUS  | 24              |              |
|         |            | PHYSA   | 4               |              |
|         |            | VALVATA SINCERA   | 46              |              |
|         |            | VALVATA TRICARINATA                                       | 145             |              |
|         |            | ALL GASTROPODA  |                 | 5475         |
|         |            | PELECYPODA<br>PISICUM                                     | 28              | 578          |
|         |            | ALL PELECYPODA  |                 | 578          |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 08

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/20/79 | 1.0       | Cnidaria            |                 |             |
|         |           | HYDRA               | 6               | 124         |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 124         |
|         |           | NEMATODA            | 8               | 165         |
|         |           | OLIGOCHAETA         | 1               | 1591        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 47              | 971         |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 971         |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 1               |             |
|         |           | -----               |                 |             |
|         |           | HYALELLA AZTECA     | 1               |             |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 41          |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 1               |             |
|         |           | CHIRONOMIDAE        | 95              | 1963        |
|         |           | ALL DIPTERA         |                 | 1983        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 3               |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 62          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | NEURECLIPSIS        | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 21          |
|         |           | NEUROPTERA          |                 |             |
|         |           | SIALIS              | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL NEUROPTERA      |                 | 21          |
|         |           | ACARIHA             | 4               | 83          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 35              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 3               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCERA     | 11              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICAMERATA | 17              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 1264        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISICUM             | 13              | 269         |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 269         |



## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 09

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/20/79 | 2.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 33              | 682         |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 682         |
|         |           | NEMATODA            | 4               | 83          |
|         |           | HIRUDINEA           | 10              | 207         |
|         |           | OLIGOCHAETA         | 89              | 1839        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 21          |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 1               |             |
|         |           | -----               |                 |             |
|         |           | HYALELLA AZTECA     | 1               |             |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 41          |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 2               | 41          |
|         |           | -----               |                 |             |
|         |           | ALL ISOPODA         |                 | 41          |
|         |           | DIPTERA             |                 |             |
|         |           | CEPATOPPOGONIDAE    | 5               |             |
|         |           | CHIRONOMIDAE        | 219             | 4525        |
|         |           | ALL DIPTERA         |                 | 4628        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 1               |             |
|         |           | -----               |                 |             |
|         |           | HEXAGENIA           | 6               |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 145         |
|         |           | LEPIDOPTERA         | 2               | 41          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | HYDROPTILIDAE       | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 21          |
|         |           | ACARINA             | 1               | 21          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 47              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 22              |             |
|         |           | -----               |                 |             |
|         |           | HELISOMA            | 21              |             |
|         |           | -----               |                 |             |
|         |           | PHYSA               | 1               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCERA     | 50              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICAPINATA | 98              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 4938        |
|         |           | PELICYPODA          |                 |             |
|         |           | PISICUM             | 34              | 702         |
|         |           | -----               |                 |             |
|         |           | ALL PELICYPODA      |                 | 702         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 11

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/16/79 | 1.0       | Cnidaria            |                 |             |
|         |           | HYDRA               | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 21          |
|         |           | RHABDOCOLLA         | 3               | 62          |
|         |           | NEMATODA            | 110             | 2273        |
|         |           | OLIGOCHAETA         | 326             | 6735        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 101             | 2087        |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 2087        |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 3               |             |
|         |           | -----               |                 |             |
|         |           | HYALELLA AZTECA     | 13              |             |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 331         |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 1               |             |
|         |           | -----               |                 |             |
|         |           | LIRCEUS             | 3               |             |
|         |           | -----               |                 |             |
|         |           | ALL ISOPODA         |                 | 83          |
|         |           | DIPTERA             |                 |             |
|         |           | CEKATOPUGONIDAE     | 12              |             |
|         |           | CHIRONOMIDAE        | 52              | 1074        |
|         |           | EMPHIDAE            | 1               |             |
|         |           | ALL DIPTERA         |                 | 1343        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | CAENIS              | 1               |             |
|         |           | -----               |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 6               |             |
|         |           | -----               |                 |             |
|         |           | HEXAGENIA           | 10              |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 351         |
|         |           | TRICHOPTERA         |                 |             |
|         |           | MYSTACIDES          | 1               |             |
|         |           | -----               |                 |             |
|         |           | POLYCENTROPUS       | 1               |             |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 41          |
|         |           | ACARINA             | 7               | 145         |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 33              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 4               |             |
|         |           | -----               |                 |             |
|         |           | HELISOMA            | 3               |             |
|         |           | -----               |                 |             |
|         |           | LYMNATA             | 2               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCERA     | 37              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICAPITATA | 19              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 2025        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 47              | 866         |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 866         |

## MACROBENTHOS OF THE ST. MARYS RIVER

34

STATION 12

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/16/79 | 1.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 2               | 41          |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 41          |
|         |           | RHABDOCOELA         | 2               | 41          |
|         |           | NEMATODA            | 182             | 3760        |
|         |           | HIRUDINEA           | 4               | 83          |
|         |           | OLIGOCHAETA         | .1              | 7056        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 444             | 9173        |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 9173        |
|         |           | OSTRACODA           | 3               | 62          |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 2               |             |
|         |           | -----               |                 |             |
|         |           | HYALELLA            | 10              |             |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 248         |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 8               | 165         |
|         |           | -----               |                 |             |
|         |           | ALL ISOPODA         |                 | 165         |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 5               |             |
|         |           | CHIRONOMIDAE        | 95              | 1963        |
|         |           | ALL DIPTERA         |                 | 2066        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | CAENIS              | 1               |             |
|         |           | -----               |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 4               |             |
|         |           | -----               |                 |             |
|         |           | HEXAGENIA           | 9               |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 289         |
|         |           | COLEOPTERA          |                 |             |
|         |           | HALIPLIDAE          | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL COLEOPTERA      |                 | 21          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | HYDROPTILIDAE       | 1               |             |
|         |           | -----               |                 |             |
|         |           | MYSTACICES          | 8               |             |
|         |           | -----               |                 |             |
|         |           | OECETIS             | 1               |             |
|         |           | -----               |                 |             |
|         |           | POLYCENTROPUS       | 2               |             |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 240         |
|         |           | ACARINA             | 6               | 124         |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 67              |             |
|         |           | -----               |                 |             |
|         |           | GYPAULUS            | 7               |             |
|         |           | -----               |                 |             |
|         |           | HELISOMA            | 2               |             |
|         |           | -----               |                 |             |
|         |           | PHYSA               | 3               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SIBCEPA     | 62              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICARINATA | 79              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 4545        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 57              | 1176        |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 1176        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 13

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/16/79 | 1.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 2               | 41          |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 41          |
|         |           | RHABDOCOELA         | 4               | 83          |
|         |           | NEMATODA            | 32              | 661         |
|         |           | HIRUDINEA           | 2               | 41          |
|         |           | OLIGOCHAETA         | 107             | 2231        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 132             | 2727        |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 2727        |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 1               |             |
|         |           | -----               |                 |             |
|         |           | HYALELLA            | 4               |             |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 103         |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 2               |             |
|         |           | CHIRONOMIDAE        | 135             | 2769        |
|         |           | EMBIIDAE            | 2               |             |
|         |           | ALL DIPTERA         |                 | 2872        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 2               |             |
|         |           | -----               |                 |             |
|         |           | HEXAGENIA           | 1               |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 62          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | POLANNA             | 1               |             |
|         |           | -----               |                 |             |
|         |           | MYSTACIDES          | 5               |             |
|         |           | -----               |                 |             |
|         |           | DECEIS              | 4               |             |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 207         |
|         |           | ACARINA             | 4               | 83          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 28              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 6               |             |
|         |           | -----               |                 |             |
|         |           | HELISOMA            | 2               |             |
|         |           | -----               |                 |             |
|         |           | PHYSA               | 1               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCERA     | 2               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICARINATA | 48              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 1797        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISICUM             | 23              | 475         |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 475         |

| DATE    | DEPTH (M.) | TAXA                 | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|----------------------|-----------------|-------------------------|
| 1/17/79 | 2.0        | CNIDARIA             |                 |                         |
|         |            | HYLRA                | 16              | 331                     |
|         |            | -----                |                 |                         |
|         |            | ALL CNIDARIA         |                 | 331                     |
|         |            | RHABDOCELA           | 4               | 83                      |
|         |            | TRICLADIDA           | 1               | 21                      |
|         |            | NEMATODA             | 17              | 351                     |
|         |            | HIRUDINEA            | 2               | 41                      |
|         |            | OLIGOCHEATA          | 302             | 6239                    |
|         |            | POLYCHAETA           |                 |                         |
|         |            | MANAYUNKIA SPECIOSA  | 6               | 124                     |
|         |            | -----                |                 |                         |
|         |            | ALL POLYCHAETA       |                 | 124                     |
|         |            | OSTRACODA            | 20              | 413                     |
|         |            | AMPHIPODA            |                 |                         |
|         |            | GAMMARUS             | 6               |                         |
|         |            | -----                |                 |                         |
|         |            | HYALELLA AZTECA      | 53              |                         |
|         |            | -----                |                 |                         |
|         |            | ALL AMPHIPODA        |                 | 1219                    |
|         |            | ISOPODA              |                 |                         |
|         |            | ASELLUS              | 8               |                         |
|         |            | -----                |                 |                         |
|         |            | LIRCEUS              | 3               |                         |
|         |            | -----                |                 |                         |
|         |            | ALL ISOPODA          |                 | 227                     |
|         |            | DIPTERA              |                 |                         |
|         |            | CERATOPOGONIDAE      | 11              |                         |
|         |            | CHIRONOMIDAE         | 187             | 3863                    |
|         |            | EPIPTERIDAE          | 2               |                         |
|         |            | ALL DIPTERA          |                 | 4132                    |
|         |            | EPHEMEROPTERA        |                 |                         |
|         |            | EPHEMERIDAE          | 14              |                         |
|         |            | HEXAGENIA            |                 |                         |
|         |            | -----                |                 |                         |
|         |            | ALL EPHEMEROPTERA    |                 | 289                     |
|         |            | COLEOPTERA           | 1               | 21                      |
|         |            | TRICHOPTERA          |                 |                         |
|         |            | AGRYPNIA             | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | MYSTACIDES           | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | ALL TRICHOPTERA      |                 | 41                      |
|         |            | ACARINA              | 9               | 186                     |
|         |            | GASTROPODA           |                 |                         |
|         |            | ANNICOLA             | 75              |                         |
|         |            | -----                |                 |                         |
|         |            | CONIOBASIS LIVESCENS | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | GYRAULUS             | 43              |                         |
|         |            | -----                |                 |                         |
|         |            | HELIOMA              | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | PHYSA                | 5               |                         |
|         |            | -----                |                 |                         |
|         |            | VALVATA SINCERA      | 105             |                         |
|         |            | -----                |                 |                         |
|         |            | VALVATA SPICARIVATA  | 17              |                         |
|         |            | -----                |                 |                         |
|         |            | ALL GASTROPODA       |                 | 5103                    |
|         |            | PELECYPODA           |                 |                         |
|         |            | PISIDIUM             | 173             | 3574                    |
|         |            | -----                |                 |                         |
|         |            | ALL PELECYPODA       |                 | 3574                    |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 15

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/17/79 | 3.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 35              | 723         |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 723         |
|         |           | RHABDOCELA          | 3               | 62          |
|         |           | NEMATODA            | 30              | 620         |
|         |           | OLIGOCHAETA         | 1               | 5227        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 15              | 310         |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 310         |
|         |           | OSTRACODA           | 2               | 41          |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 1               |             |
|         |           | -----               |                 |             |
|         |           | HYALELLA            | 1               |             |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 41          |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 15              |             |
|         |           | CHIRONOMIDAE        | 162             | 3347        |
|         |           | EMBIIDAE            | 1               |             |
|         |           | ALL DIPTERA         |                 | 3677        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 3               |             |
|         |           | -----               |                 |             |
|         |           | HEXAGENIA           | 32              |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 723         |
|         |           | LEPIDOPTERA         | 1               | 21          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | DECEYIS             | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 21          |
|         |           | ACARINA             | 8               | 165         |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 32              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 3               |             |
|         |           | -----               |                 |             |
|         |           | PELLICOLA           | 5               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCERA     | 53              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICAPitata | 4               |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 2904        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISCICUM            | 108             | 2231        |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 2231        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 16

| DATE    | DEPTH(M.) | TAXON                | 38 | --GRAH COUNTS-- | MEAN NO./M2 |
|---------|-----------|----------------------|----|-----------------|-------------|
| 1/16/79 | 1.0       | CNIDARIA             |    |                 |             |
|         |           | HYDRA                |    | 3               | 62          |
|         |           | ALL CNIDARIA         |    |                 | 62          |
|         |           | RHABDOCELA           |    | 5               | 103         |
|         |           | TRICLACIDA           |    | 8               | 165         |
|         |           | NEMATODA             |    | 43              | 888         |
|         |           | HIRUDINEA            |    | 2               | 41          |
|         |           | OLIGOCHAETA          |    | 414             | 6553        |
|         |           | POLYCHAETA           |    |                 |             |
|         |           | MANAYUNKIA SPECIOSA  |    | 35              | 723         |
|         |           | ALL POLYCHAETA       |    |                 | 723         |
|         |           | OSTRACODA            |    | 4               | 83          |
|         |           | AMPHIPODA            |    |                 |             |
|         |           | HYALELLA AZTECA      |    | 110             | 2273        |
|         |           | ALL AMPHIPODA        |    |                 | 2273        |
|         |           | ISOPODA              |    |                 |             |
|         |           | ASELLUS              |    | 25              |             |
|         |           | LIRCEUS              |    | 10              |             |
|         |           | ALL ISOPODA          |    |                 | 723         |
|         |           | DIPTERA              |    |                 |             |
|         |           | CERATOPOGONIDAE      |    | 30              |             |
|         |           | CHIRONOMIDAE         |    | 591             | 12210       |
|         |           | EMPHIDIDAE           |    | 3               |             |
|         |           | ALL DIPTERA          |    |                 | 12892       |
|         |           | EPHEMEROPTERA        |    |                 |             |
|         |           | EPHEMEROPTERA        |    |                 |             |
|         |           | CAENIS               |    | 2               |             |
|         |           | EPHEMERIDAE          |    |                 |             |
|         |           | EPHEMERA             |    | 1               |             |
|         |           | HEXAGENIA            |    | 4               |             |
|         |           | ALL EPHEMEROPTERA    |    |                 | 145         |
|         |           | COLEOPTERA           |    |                 |             |
|         |           | CYTISCIDAE           |    | 1               | 21          |
|         |           | ALL COLEOPTERA       |    |                 | 21          |
|         |           | LEPIDOPTERA          |    | 18              | 372         |
|         |           | TRICHOPTERA          |    |                 |             |
|         |           | MYSTACIDES           |    | 16              |             |
|         |           | PHYLOCENTROPUS       |    | 1               |             |
|         |           | POLYCENTROPUS        |    | 11              |             |
|         |           | ALL TRICHOPTERA      |    |                 | 576         |
|         |           | ACAPINA              |    | 6               | 124         |
|         |           | GASTROPODA           |    |                 |             |
|         |           | AMNICOLA             |    | 46              |             |
|         |           | GYPAULUS             |    | 31              |             |
|         |           | LYMNAEA              |    | 1               |             |
|         |           | PHYSA                |    | 2               |             |
|         |           | VALVATA SINCEPA      |    | 33              |             |
|         |           | VALVATA TRICARTINATA |    | 5               |             |
|         |           | ALL GASTROPODA       |    |                 | 2434        |
|         |           | PELECYPODA           |    |                 |             |
|         |           | PISIDIA              |    | 175             | 3615        |
|         |           | ALL PELECYPODA       |    |                 | 3615        |

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./ |
|---------|------------|---------------------|-----------------|-----------|
| 1/16/79 | 1.0        | CNIDARIA            |                 |           |
|         |            | HYDRA               | 2               | 41        |
|         |            | ALL CNIDARIA        |                 | 41        |
|         |            | RHABDOCOELA         | 2               | 41        |
|         |            | NEMATODA            | 11              | 227       |
|         |            | HIRUDINEA           | 1               | 21        |
|         |            | OLIGOCHAETA         | 204             | 4215      |
|         |            | POLYCHAETA          |                 |           |
|         |            | MANAYUNKIA SPECIOSA | 3               | 62        |
|         |            | ALL POLYCHAETA      |                 | 62        |
|         |            | AMPHIPODA           |                 |           |
|         |            | GAMMARUS            | 5               |           |
|         |            | HYALELLA            | 95              |           |
|         |            | ALL AMPHIPODA       |                 | 2066      |
|         |            | ISOPODA             |                 |           |
|         |            | ASELLUS             | 3               |           |
|         |            | LIRCEUS             | 1               |           |
|         |            | ALL ISOPODA         |                 | 83        |
|         |            | DIPTERA             |                 |           |
|         |            | CERATOPOGONIDAE     | 48              |           |
|         |            | CHIRONOMIDAE        | 520             | 10743     |
|         |            | EMPHIDIDAE          | 6               |           |
|         |            | TIPULIDAE           | 1               |           |
|         |            | ALL DIPTERA         |                 | 11879     |
|         |            | EPIHEMEROPTERA      |                 |           |
|         |            | EPHEMEROPTERA       |                 |           |
|         |            | CAENIS              | 3               |           |
|         |            | EPHEMERIDAE         |                 |           |
|         |            | EPHEMERA            | 12              |           |
|         |            | HEXAGENIA           | 1               |           |
|         |            | ALL EPHEMEROPTERA   |                 | 331       |
|         |            | COLEOPTERA          |                 |           |
|         |            | DYTISCIDAE          | 1               | 21        |
|         |            | ALL COLEOPTERA      |                 | 21        |
|         |            | LEPIDOPTERA         | 3               | 62        |
|         |            | TRICHOPTERA         |                 |           |
|         |            | HYSTACIDAE          | 2               |           |
|         |            | POLYCENTROPUS       | 1               |           |
|         |            | ALL TRICHOPTERA     |                 | 62        |
|         |            | ACARINA             | 18              | 312       |
|         |            | GASTROPODA          |                 |           |
|         |            | AMNICOLA            | 46              |           |
|         |            | GYRAULUS            | 79              |           |
|         |            | PHYSA               | 3               |           |
|         |            | VALVATA SINCERA     | 2               |           |
|         |            | VALVATA TRICARINATA | 4               |           |
|         |            | ALL GASTROPODA      |                 | 2768      |
|         |            | PELECYPODA          |                 |           |
|         |            | PISICUM             | 393             | 6119      |
|         |            | ALL PELECYPODA      |                 | 6119      |



## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 18

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/17/79 | 1.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 1               | 21          |
|         |           | ALL CNIDARIA        |                 | 21          |
|         |           | RHABDOCOELA         | 5               | 103         |
|         |           | NEMATODA            | 58              | 1198        |
|         |           | HIRUDINEA           | 5               | 103         |
|         |           | OLIGOCHAETA         | 224             | 4628        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 65              | 1343        |
|         |           | ALL POLYCHAETA      |                 | 1343        |
|         |           | AMPHIPODA           |                 |             |
|         |           | HYALELLA AZTECA     | 99              | 2045        |
|         |           | ALL AMPHIPODA       |                 | 2045        |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 1               |             |
|         |           | LIRCEUS             | 1               |             |
|         |           | ALL ISOPODA         |                 | 41          |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPUGONIDAE     | 12              |             |
|         |           | CHIRONOMIDAE        | 127             | 2624        |
|         |           | EMBIIDAE            | 2               |             |
|         |           | ALL DIPTERA         |                 | 2913        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 3               |             |
|         |           | HEXAGENIA           | 9               |             |
|         |           | ALL EPHEMEROPTERA   |                 | 248         |
|         |           | COLEOPTERA          |                 |             |
|         |           | HALIPLUS            | 1               | 21          |
|         |           | ALL COLEOPTERA      |                 | 21          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | MYSTACIDUS          | 13              |             |
|         |           | PHYLOCENTROPUS      | 1               |             |
|         |           | ALL TRICHOPTERA     |                 | 289         |
|         |           | ACARINA             | 6               | 165         |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 38              |             |
|         |           | GYRAULUS            | 2               |             |
|         |           | HELISOMA            | 1               |             |
|         |           | VALVATA SINCERA     | 20              |             |
|         |           | VALVATA TRICARINATA | 3               |             |
|         |           | ALL GASTROPODA      |                 | 1322        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 188             | 3684        |
|         |           | ALL PELECYPODA      |                 | 3684        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 19

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 1/17/79 | 2.0       | NEMATODA            | 9               | 186         |
|         |           | OLIGOCHAETA         | 55              | 1136        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 3               | 62          |
|         |           | ALL POLYCHAETA      |                 | 62          |
|         |           | AMPHIPODA           |                 |             |
|         |           | HYALELLA AZTECA     | 21              | 434         |
|         |           | ALL AMPHIPODA       |                 | 434         |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 5               |             |
|         |           | LIRCEUS             | 2               |             |
|         |           | ALL ISOPODA         |                 | 145         |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 15              |             |
|         |           | CHIRONOMIDAE        | 79              | 1632        |
|         |           | EMPIDIDAE           | 3               |             |
|         |           | ALL DIPTERA         |                 | 2004        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 3               |             |
|         |           | HEXAGENIA           | 6               |             |
|         |           | ALL EPHEMEROPTERA   |                 | 186         |
|         |           | TRICHOPTERA         |                 |             |
|         |           | MYSTACIDES          | 4               | 83          |
|         |           | ALL TRICHOPTERA     |                 | 83          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 26              |             |
|         |           | GYRAULUS            | 2               |             |
|         |           | VALVATA SINCERA     | 1               |             |
|         |           | VALVATA TRICARINATA | 3               |             |
|         |           | ALL GASTROPODA      |                 | 661         |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 53              | 1095        |
|         |           | ALL PELECYPODA      |                 | 1095        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 20

| DATE    | DEPTH(M.) | TAXON             | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|-------------------|-----------------|-------------|
| 1/17/79 | 3.0       | CNIDARIA          |                 |             |
|         |           | HYDRA             | 4               | 83          |
|         |           | -----             |                 |             |
|         |           | ALL CNIDARIA      |                 | 83          |
|         |           | RHARDOGELA        | 1               | 21          |
|         |           | TRICLACIDA        | 12              | 248         |
|         |           | NEMATODA          | 19              | 393         |
|         |           | OLIGOCHAETA       | 238             | 4917        |
|         |           | AMPHIPODA         |                 |             |
|         |           | GAMMARUS          | 1               |             |
|         |           | -----             |                 |             |
|         |           | HYALELLA          | 6               |             |
|         |           | -----             |                 |             |
|         |           | ALL AMPHIPODA     |                 | 145         |
|         |           | ISOPODA           |                 |             |
|         |           | ASELLUS           | 43              |             |
|         |           | -----             |                 |             |
|         |           | LIRCEUS           | 31              |             |
|         |           | -----             |                 |             |
|         |           | ALL ISOPODA       |                 | 1529        |
|         |           | DIPTERA           |                 |             |
|         |           | CERATOPOGONIDAE   | 20              |             |
|         |           | CHIRONOMIDAE      | 435             | 8987        |
|         |           | ALL DIPTERA       |                 | 9400        |
|         |           | EPHEMEROPTERA     |                 |             |
|         |           | EPHEMERIDAE       |                 |             |
|         |           | EPHEMERA          | 3               |             |
|         |           | -----             |                 |             |
|         |           | HEXAGENIA         | 4               |             |
|         |           | -----             |                 |             |
|         |           | ALL EPHEMEROPTERA |                 | 145         |
|         |           | TRICHOPTERA       |                 |             |
|         |           | HYSTACIDES        | 2               |             |
|         |           | -----             |                 |             |
|         |           | POLYCENTROPUS     | 6               |             |
|         |           | -----             |                 |             |
|         |           | ALL TRICHOPTERA   |                 | 165         |
|         |           | ACARINA           | 4               | 83          |
|         |           | GASTROPODA        |                 |             |
|         |           | AMNIGOLA          | 29              |             |
|         |           | -----             |                 |             |
|         |           | PHYSA             | 4               |             |
|         |           | -----             |                 |             |
|         |           | VALVATA SINCEPA   | 1               |             |
|         |           | -----             |                 |             |
|         |           | ALL GASTROPODA    |                 | 702         |
|         |           | PELECYPODA        |                 |             |
|         |           | PISICUM           | 14              | 289         |
|         |           | -----             |                 |             |
|         |           | ALL PELECYPODA    |                 | 289         |

## MACROBENTHOS OF THE ST. MARYS RIVER

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | STATION 01<br>MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|---------------------------------------|
| 2/18/79 | 1.0        | CHIDARIA            |                 |                                       |
|         |            | HYCRA               | 8               | 165                                   |
|         |            | -----               |                 |                                       |
|         |            | ALL CHIDARIA        |                 | 165                                   |
|         |            | NEMATODA            | 12              | 248                                   |
|         |            | HIKUDINEA           | 1               | 21                                    |
|         |            | OLIGOCHAETA         | 306             | 6322                                  |
|         |            | POLYCHAETA          |                 |                                       |
|         |            | MANAYUNKIA SPECIOSA | 63              | 1302                                  |
|         |            | -----               |                 |                                       |
|         |            | ALL POLYCHAETA      |                 | 1302                                  |
|         |            | AMPHIPODA           |                 |                                       |
|         |            | HYALELLA            | 3               | 62                                    |
|         |            | -----               |                 |                                       |
|         |            | ALL AMPHIPODA       |                 | 62                                    |
|         |            | ISOPODA             |                 |                                       |
|         |            | ASELLUS             | 2               | 41                                    |
|         |            | -----               |                 |                                       |
|         |            | ALL ISOPODA         |                 | 41                                    |
|         |            | DIPTERA             |                 |                                       |
|         |            | CERATOPOGONIDAE     | 7               |                                       |
|         |            | CHIRONOMIDAE        | 92              | 1901                                  |
|         |            | EMPIDIDAE           | 10              |                                       |
|         |            | ALL DIPTERA         |                 | 2252                                  |
|         |            | EPEMEROPTERA        |                 |                                       |
|         |            | EPEMERIDAE          |                 |                                       |
|         |            | EPEMERKA            | 3               |                                       |
|         |            | -----               |                 |                                       |
|         |            | HEXAGENIA           | 3               |                                       |
|         |            | -----               |                 |                                       |
|         |            | ALL EPEMEROPTERA    |                 | 124                                   |
|         |            | TRICHOPTERA         |                 |                                       |
|         |            | POLYCENTROPUS       | 1               | 21                                    |
|         |            | -----               |                 |                                       |
|         |            | ALL TRICHOPTERA     |                 | 21                                    |
|         |            | ACARINA             | 10              | 207                                   |
|         |            | GASTROPODA          |                 |                                       |
|         |            | AMNICOLA            | 94              |                                       |
|         |            | -----               |                 |                                       |
|         |            | GYRAULUS            | 21              |                                       |
|         |            | -----               |                 |                                       |
|         |            | HELISOMA            | 1               |                                       |
|         |            | -----               |                 |                                       |
|         |            | VALVATA TRICARINATA | 6               |                                       |
|         |            | -----               |                 |                                       |
|         |            | ALL GASTROPODA      |                 | 2521                                  |
|         |            | PELECYPODA          |                 |                                       |
|         |            | PISICUM             | 89              | 1839                                  |
|         |            | -----               |                 |                                       |
|         |            | ALL PELECYPODA      |                 | 1839                                  |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 02

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|-----------|---------------------|-----------------|-------------------------|
| 2/18/79 | 1.0       | CNIDARIA            |                 |                         |
|         |           | HYDRA               | 1               | 21                      |
|         |           | ALL CNIDARIA        |                 | 21                      |
|         |           | HIRUDINEA           | 1               | 21                      |
|         |           | OLIGOCHAETA         | 35              | 723                     |
|         |           | AMPHIPODA           |                 |                         |
|         |           | HYALELLA            | 1               | 21                      |
|         |           | ALL AMPHIPODA       |                 | 21                      |
|         |           | ISOPODA             |                 |                         |
|         |           | LIRCEUS             | 3               | 62                      |
|         |           | ALL ISOPODA         |                 | 62                      |
|         |           | DIPTERA             |                 |                         |
|         |           | CERATOPOGONIDAE     | 2               |                         |
|         |           | CHIRONOMIDAE        | 29              | 599                     |
|         |           | EMPIDIDAE           | 4               |                         |
|         |           | ALL DIPTERA         |                 | 723                     |
|         |           | EPHEMEROPTERA       |                 |                         |
|         |           | EPHENERIDAE         |                 |                         |
|         |           | HEXAGENIA           | 1               |                         |
|         |           | ALL EPHEMEROPTERA   |                 | 21                      |
|         |           | TRICHOPTERA         |                 |                         |
|         |           | MYSTACIDES          | 1               | 21                      |
|         |           | ALL TRICHOPTERA     |                 | 21                      |
|         |           | ACARINA             | 5               | 103                     |
|         |           | GASTROPODA          |                 |                         |
|         |           | AMNICOLA            | 15              |                         |
|         |           | GYRAULUS            | 1               |                         |
|         |           | VALVATA SINCERA     | 12              |                         |
|         |           | VALVATA TRICARINATA | 10              |                         |
|         |           | ALL GASTROPODA      |                 | 785                     |
|         |           | PELECYPODA          |                 |                         |
|         |           | PISIDIUM            | 26              | 537                     |
|         |           | ALL PELECYPODA      |                 | 537                     |

## MACROINVERTS OF THE ST. MARYS RIVER

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STATION 03

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 2/17/79 | 1.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 7               | 145         |
|         |           | ALL CNIDARIA        |                 | 145         |
|         |           | RHABDOCOELA         | 2               | 41          |
|         |           | NEMATODA            | 1               | 21          |
|         |           | OLIGOCHAETA         | 45              | 930         |
|         |           | DECAPODA            |                 |             |
|         |           | ORCONECTES          | 1               | 21          |
|         |           | ALL DECAPODA        |                 | 21          |
|         |           | GSTRACODA           | 1               | 21          |
|         |           | AMPHIPODA           |                 |             |
|         |           | GAMMARUS            | 3               |             |
|         |           | HYALELLA            | 4               |             |
|         |           | ALL AMPHIPODA       |                 | 145         |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 1               |             |
|         |           | LIRCEUS             | 3               |             |
|         |           | ALL ISOPODA         |                 | 83          |
|         |           | DIPTERA             |                 |             |
|         |           | CHIRONOMIDAE        | 39              | 806         |
|         |           | EMPIDIDAE           | 1               |             |
|         |           | ALL DIPTERA         |                 | 826         |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 2               |             |
|         |           | ALL EPHEMEROPTERA   |                 | 41          |
|         |           | LEPIDOPTERA         | 2               | 41          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | MOLANNA             | 1               |             |
|         |           | MYSTACIDES          | 1               |             |
|         |           | ALL TRICHOPTERA     |                 | 41          |
|         |           | ACARINA             | 5               | 103         |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 16              |             |
|         |           | GYRAULUS            | 5               |             |
|         |           | HELISOMA            | 2               |             |
|         |           | VALVATA SINCERA     | 9               |             |
|         |           | VALVATA TRICARINATA | 8               |             |
|         |           | ALL GASTROPODA      |                 | 826         |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 12              | 248         |
|         |           | ALL PELECYPODA      |                 | 248         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 04

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 2/17/79 | 2.0        | CNIDARIA            |                 |             |
|         |            | HYDRA               | 86              | 1777        |
|         |            | ALL CNIDARIA        |                 | 1777        |
|         |            | RHABDOCOELA         | 2               | 41          |
|         |            | NEMATODA            | 4               | 83          |
|         |            | HIRUDINIA           |                 |             |
|         |            | OLIGOCHAETA         | 67              | 1384        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 3               | 62          |
|         |            | ALL POLYCHAETA      |                 | 62          |
|         |            | OSTRACODA           | 7               | 145         |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA AZTECA     | 23              | 475         |
|         |            | ALL AMPHIPODA       |                 | 475         |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 1               |             |
|         |            | LIRCEUS             | 3               |             |
|         |            | ALL ISOPODA         |                 | 83          |
|         |            | DIPTERA             |                 |             |
|         |            | CHIRONOMIDAE        | 55              | 1136        |
|         |            | EMPHIDIDAE          | 5               |             |
|         |            | SIMULIIDAE          | 2               |             |
|         |            | ALL DIPTERA         |                 | 1281        |
|         |            | EPIHEMEROPTERA      |                 |             |
|         |            | EPIHEMERIDAE        |                 |             |
|         |            | EPIHEMERA           | 4               |             |
|         |            | HEXAGENIA           | 1               |             |
|         |            | ALL EPIHEMEROPTERA  |                 | 103         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | MYSTACIDES          | 5               | 103         |
|         |            | ALL TRICHOPTERA     |                 | 103         |
|         |            | ACARINA             | 3               | 62          |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICULA            | 119             |             |
|         |            | CYPAULUS            | 17              |             |
|         |            | HELISCA             | 1               |             |
|         |            | PHYSA               | 12              |             |
|         |            | VALVATA SINCEPA     | 75              |             |
|         |            | VALVATA TRICARINATA | 79              |             |
|         |            | ALL GASTROPODA      |                 | 6260        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 58              | 1198        |
|         |            | ALL PELECYPODA      |                 | 1198        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 06

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 2/17/79 | 1.0       | RHABDOCOELA         | 1               | 21          |
|         |           | NEMATODA            | 3               | 62          |
|         |           | HIRUDINEA           | 3               | 62          |
|         |           | OLIGOCHAETA         | 97              | 2004        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 136             | 2810        |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 2810        |
|         |           | OSTRACODA           | 1               | 21          |
|         |           | AMPHIPODA           |                 |             |
|         |           | HYALELLA            | 6               | 124         |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 124         |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 3               |             |
|         |           | CHIRONOMIDAE        | 233             | 4814        |
|         |           | EMBIIDAE            | 8               |             |
|         |           | ALL DIPTERA         |                 | 5041        |
|         |           | TRICHOPTERA         |                 |             |
|         |           | POLYCENTROPUS       | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 21          |
|         |           | ACARINA             | 3               | 62          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 16              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 2               |             |
|         |           | -----               |                 |             |
|         |           | HELISOMA            | 2               |             |
|         |           | -----               |                 |             |
|         |           | LYMAEA              | 8               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCFRA     | 49              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICARINATA | 62              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 2872        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISICUM             | 32              | 661         |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 661         |



## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 07

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|-----------|---------------------|-----------------|-------------------------|
| 2/17/79 | 1.0       | CNIDARIA            |                 |                         |
|         |           | HYDRA               | 4               | 83                      |
|         |           | -----               |                 |                         |
|         |           | ALL CNIDARIA        |                 | 83                      |
|         |           | RHABDOCOELA         | 1               | 21                      |
|         |           | NEMATODA            | 30              | 620                     |
|         |           | HIRUDINEA           | 8               | 165                     |
|         |           | OLIGOCHAETA         | 275             | 5681                    |
|         |           | POLYCHAETA          |                 |                         |
|         |           | MANAYUNKIA SPECIOSA | 276             | 5702                    |
|         |           | -----               |                 |                         |
|         |           | ALL POLYCHAETA      |                 | 5702                    |
|         |           | AMPHIPODA           |                 |                         |
|         |           | GAMMARUS            | 3               |                         |
|         |           | -----               |                 |                         |
|         |           | HYALFLLA            | 21              |                         |
|         |           | -----               |                 |                         |
|         |           | ALL AMPHIPODA       |                 | 496                     |
|         |           | DIPTERA             |                 |                         |
|         |           | CERATOPOGONIDAE     | 10              |                         |
|         |           | CHIRONOMIDAE        | 619             | 12789                   |
|         |           | EMPIDIDAE           | 4               |                         |
|         |           | ALL DIPTERA         |                 | 13078                   |
|         |           | EPHEMEROPTERA       |                 |                         |
|         |           | EPHEMEROPTERA       |                 |                         |
|         |           | CAENIS              | 2               |                         |
|         |           | -----               |                 |                         |
|         |           | EPHEMERIDAE         |                 |                         |
|         |           | EPHEMERA            | 6               |                         |
|         |           | -----               |                 |                         |
|         |           | HEXAGENIA           | 2               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL EPHEMEROPTERA   |                 | 207                     |
|         |           | LEPIDOPTERA         | 2               | 41                      |
|         |           | TRICHOPTERA         |                 |                         |
|         |           | HYDROPTILIDAE       | 1               |                         |
|         |           | MYSTACIGES          | 7               |                         |
|         |           | -----               |                 |                         |
|         |           | OECETIS             | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | POLYCENTROPUS       | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL TRICHOPTERA     |                 | 207                     |
|         |           | ACARINA             | 9               | 166                     |
|         |           | GASTROPODA          |                 |                         |
|         |           | AMPICOLA            | 143             |                         |
|         |           | -----               |                 |                         |
|         |           | GYRAULUS            | 30              |                         |
|         |           | -----               |                 |                         |
|         |           | HELISOMA            | 7               |                         |
|         |           | -----               |                 |                         |
|         |           | LYMNAEA             | 16              |                         |
|         |           | -----               |                 |                         |
|         |           | PHYSA               | 2               |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA SINGERA     | 15              |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA TRICARINATA | 230             |                         |
|         |           | -----               |                 |                         |
|         |           | ALL GASTROPODA      |                 | 9152                    |
|         |           | PELLECYPODA         |                 |                         |
|         |           | PISTILIA            | 76              | 1611                    |
|         |           | -----               |                 |                         |
|         |           | ALL PELLECYPODA     |                 | 1611                    |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 08

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 2/16/79 | 1.0        | NEMATODA            | 3               | 62          |
|         |            | HIRUDINEA           | 1               | 21          |
|         |            | OLIGOCHAETA         | 78              | 1611        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 43              | 888         |
|         |            | ALL POLYCHAETA      |                 | 888         |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA AZTECA     | 6               | 124         |
|         |            | ALL AMPHIPODA       |                 | 124         |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 1               | 21          |
|         |            | ALL ISOPODA         |                 | 21          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 2               |             |
|         |            | CHIRONOMIDAE        | 113             | 2335        |
|         |            | EMPHIDAE            | 7               |             |
|         |            | ALL DIPTERA         |                 | 2521        |
|         |            | EPTHEMEROPTERA      |                 |             |
|         |            | EPTHEMEROPTERA      |                 |             |
|         |            | CAENIS              | 2               |             |
|         |            | EPTHEMERIDAE        |                 |             |
|         |            | EPHEMERA            | 5               |             |
|         |            | HEXAGENIA           | 1               |             |
|         |            | ALL EPTHEMEROPTERA  |                 | 165         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | MOLANHA             | 1               |             |
|         |            | MYSTACIDES          | 2               |             |
|         |            | ALL TRICHOPTERA     |                 | 62          |
|         |            | ACARINA             | 6               | 124         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 13              |             |
|         |            | GYRAULUS            | 2               |             |
|         |            | HELISOMA            | 3               |             |
|         |            | LYMAEA              | 9               |             |
|         |            | VALVATA SINCPA      | 9               |             |
|         |            | VALVATA TRICARINATA | 3               |             |
|         |            | ALL GASTROPODA      |                 | 806         |
|         |            | PELECYPODA          |                 |             |
|         |            | PISICUM             | 29              | 599         |
|         |            | ALL PELECYPODA      |                 | 599         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 09

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 2/17/79 | 2.0        | CNIDARIA            |                 |             |
|         |            | HYDRA               | 15              | 310         |
|         |            | -----               |                 |             |
|         |            | ALL CNIDARIA        |                 | 310         |
|         |            | NEMATODA            | 1               | 21          |
|         |            | HIRUDINEA           | 6               | 124         |
|         |            | OLIGOCHAETA         | 42              | 868         |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 6               | 124         |
|         |            | -----               |                 |             |
|         |            | ALL POLYCHAETA      |                 | 124         |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 21          |
|         |            | ISOPODA             |                 |             |
|         |            | LIRCEUS             | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL ISOPODA         |                 | 21          |
|         |            | DIPTERA             |                 |             |
|         |            | CHIRONOMIDAE        | 79              | 1632        |
|         |            | EMBIIDAE            | 6               |             |
|         |            | SIMULIIDAE          | 2               |             |
|         |            | ALL DIPTERA         |                 | 1797        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 1               |             |
|         |            | -----               |                 |             |
|         |            | HEXAGENIA           | 6               |             |
|         |            | -----               |                 |             |
|         |            | ALL EPHEMEROPTERA   |                 | 145         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | OECETIS             | 1               |             |
|         |            | -----               |                 |             |
|         |            | POLYCENTROPUS       | 3               |             |
|         |            | -----               |                 |             |
|         |            | ALL TRICHOPTERA     |                 | 83          |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNIOCOLA           | 22              |             |
|         |            | -----               |                 |             |
|         |            | GYRAULUS            | 11              |             |
|         |            | -----               |                 |             |
|         |            | HELISSA             | 6               |             |
|         |            | -----               |                 |             |
|         |            | LYMBIAEA            | 9               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINGULA     | 64              |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICAPINATA | 29              |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 2913        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISICUM             | 57              | 1178        |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 1178        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 11

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 2/18/79 | 1.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 21          |
|         |           | RHARDOCOELA         | 1               | 21          |
|         |           | NEMATODA            | 17              | 351         |
|         |           | OLIGOCHAETA         | 144             | 2975        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 27              | 558         |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 558         |
|         |           | OSTRACODA           | 3               | 62          |
|         |           | AMPHIPODA           |                 |             |
|         |           | HYALELLA            | 24              | 496         |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 496         |
|         |           | ISOPODA             |                 |             |
|         |           | ASELLUS             | 1               |             |
|         |           | -----               |                 |             |
|         |           | LIRCEUS             | 4               |             |
|         |           | -----               |                 |             |
|         |           | ALL ISCPODA         |                 | 103         |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 11              |             |
|         |           | CHIRONOMIDAE        | 52              | 1074        |
|         |           | EMPHIDAE            | 1               |             |
|         |           | ALL DIPTERA         |                 | 1372        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | CAENIS              | 1               |             |
|         |           | -----               |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 1               |             |
|         |           | -----               |                 |             |
|         |           | HEXAGENIA           | 8               |             |
|         |           | -----               |                 |             |
|         |           | ALL EPHEMEROPTERA   |                 | 207         |
|         |           | COLEOPTERA          |                 |             |
|         |           | HALIPIDAE           | 3               | 62          |
|         |           | -----               |                 |             |
|         |           | ALL COLEOPTERA      |                 | 62          |
|         |           | TRICHOPTERA         |                 |             |
|         |           | MYSTACIDAE          | 2               | 41          |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 41          |
|         |           | ACARINA             | 3               | 62          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 45              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 5               |             |
|         |           | -----               |                 |             |
|         |           | HELISOMA            | 3               |             |
|         |           | -----               |                 |             |
|         |           | LYMNAEA             | 1               |             |
|         |           | -----               |                 |             |
|         |           | PHYSA               | 2               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCERA     | 60              |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICARINATA | 30              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 3016        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 94              | 1942        |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 1942        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 12

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 2/18/79 | 1.0        | NEMATODA            | 18              | 372         |
|         |            | HIRUDINEA           | 3               | 62          |
|         |            | OLIGOCHAETA         | 199             | 4111        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 18              | 372         |
|         |            | -----               |                 |             |
|         |            | ALL POLYCHAETA      |                 | 372         |
|         |            | OSTRACODA           | 2               | 41          |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 6               | 124         |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 124         |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL ISOPODA         |                 | 21          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 5               |             |
|         |            | CHIRONOMIDAE        | 108             | 2231        |
|         |            | EMPIDIDAE           | 3               |             |
|         |            | ALL DIPTERA         |                 | 2397        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | CAENIS              | 1               |             |
|         |            | -----               |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 5               |             |
|         |            | -----               |                 |             |
|         |            | HEXAGENIA           | 8               |             |
|         |            | -----               |                 |             |
|         |            | ALL EPHEMEROPTERA   |                 | 289         |
|         |            | LEPIDOPTERA         | 1               | 21          |
|         |            | TRICHOPTERA         |                 |             |
|         |            | HYSTACIDES          | 6               | 124         |
|         |            | -----               |                 |             |
|         |            | ALL TRICHOPTERA     |                 | 124         |
|         |            | ACARINA             | 2               | 41          |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 42              |             |
|         |            | -----               |                 |             |
|         |            | GYRAULUS            | 8               |             |
|         |            | -----               |                 |             |
|         |            | HELIOMA             | 2               |             |
|         |            | -----               |                 |             |
|         |            | LYMNAEA             | 4               |             |
|         |            | -----               |                 |             |
|         |            | PHYSA               | 3               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINCERA     | 69              |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICARINATA | 68              |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 4049        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 106             | 2190        |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 2190        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 13

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 2/18/79 | 1.0       | OLIGOCHAETA         | 11              | 227         |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 1               | 21          |
|         |           | ALL POLYCHAETA      |                 | 21          |
|         |           | OSTRACODA           | 1               | 21          |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 1               |             |
|         |           | CHIRONOMIDAE        | 15              | 310         |
|         |           | ALL DIPTERA         |                 | 331         |
|         |           | EPEHEMEROPTERA      |                 |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 1               |             |
|         |           | ALL EPEHEMEROPTERA  |                 | 21          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 9               |             |
|         |           | GYRALLUS            | 7               |             |
|         |           | HELISOMA            | 2               |             |
|         |           | LYMNAEA             | 1               |             |
|         |           | VALVATA SINCERA     | 25              |             |
|         |           | VALVATA TRICARINATA | 72              |             |
|         |           | ALL GASTROPODA      |                 | 2397        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 19              | 393         |
|         |           | ALL PELECYPODA      |                 | 393         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 14

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 2/19/79 | 2.0        | CNIDARIA            |                 |             |
|         |            | HYDRA               | 15              | 310         |
|         |            | ALL CNIDARIA        |                 | 310         |
|         |            | NEMATODA            | 2               | 41          |
|         |            | HIRUDINEA           | 1               | 21          |
|         |            | OLIGOCHAETA         | 24              | 496         |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 1               | 21          |
|         |            | ALL POLYCHAETA      |                 | 21          |
|         |            | OSTRACODA           | 2               | 41          |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 10              | 207         |
|         |            | ALL AMPHIPODA       |                 | 207         |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 1               |             |
|         |            | LIRCEUS             | 3               |             |
|         |            | ALL ISOPODA         |                 | 83          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 2               |             |
|         |            | CHIRONOMIDAE        | 79              | 1632        |
|         |            | EMPIDIDAE           | 1               |             |
|         |            | ALL DIPTERA         |                 | 1694        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 1               |             |
|         |            | HEXAGENIA           | 2               |             |
|         |            | ALL EPHEMEROPTERA   |                 | 62          |
|         |            | LEPIDOPTERA         | 1               | 21          |
|         |            | TRICHOPTERA         |                 |             |
|         |            | MOLANNA             | 1               |             |
|         |            | MYSTACIDES          | 3               |             |
|         |            | POLYCENTROPUS       | 2               |             |
|         |            | ALL TRICHOPTERA     |                 | 124         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 33              |             |
|         |            | GYPAULUS            | 9               |             |
|         |            | HELISMA             | 2               |             |
|         |            | PHYSA               | 1               |             |
|         |            | VALVATA SINCERA     | 31              |             |
|         |            | VALVATA TRICAMINATA | 3               |             |
|         |            | ALL GASTROPODA      |                 | 1632        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 31              | 640         |
|         |            | ALL PELECYPODA      |                 | 640         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 15

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|-------------------------|
| 2/19/79 | 3.0        | CNIDARIA            |                 |                         |
|         |            | HYDRA               | 57              | 1178                    |
|         |            | -----               |                 |                         |
|         |            | ALL CNIDARIA        |                 | 1178                    |
|         |            | RHABDOCELA          | 12              | 248                     |
|         |            | NEMATODA            | 2               | 41                      |
|         |            | HIRUDINIA           | 1               | 21                      |
|         |            | OLIGOCHAETA         | 72              | 1488                    |
|         |            | POLYCHAETA          |                 |                         |
|         |            | MANAYUNKIA SPECIOSA | 12              | 248                     |
|         |            | -----               |                 |                         |
|         |            | ALL POLYCHAETA      |                 | 248                     |
|         |            | AMPHIPODA           |                 |                         |
|         |            | GAMMARUS            | 1               |                         |
|         |            | -----               |                 |                         |
|         |            | HYALELLA            | 6               |                         |
|         |            | -----               |                 |                         |
|         |            | ALL AMPHIPODA       |                 | 145                     |
|         |            | DIPTERA             |                 |                         |
|         |            | CERATOPOGONIDAE     | 6               |                         |
|         |            | CHIRONOMIDAE        | 252             | 5206                    |
|         |            | EMPIDIDAE           | 3               |                         |
|         |            | ALL DIPTERA         |                 | 5392                    |
|         |            | EPHEMEROPTERA       |                 |                         |
|         |            | EPHEMERIDAE         |                 |                         |
|         |            | EPHEMERA            | 3               |                         |
|         |            | -----               |                 |                         |
|         |            | HEXAGENIA           | 18              |                         |
|         |            | -----               |                 |                         |
|         |            | ALL EPHEMEROPTERA   |                 | 434                     |
|         |            | TRICHOPTERA         |                 |                         |
|         |            | POLYCENTROPUS       | 1               | 21                      |
|         |            | -----               |                 |                         |
|         |            | ALL TRICHOPTERA     |                 | 21                      |
|         |            | ACARINA             | 11              | 227                     |
|         |            | GASTROPODA          |                 |                         |
|         |            | AMNICOLA            | 63              |                         |
|         |            | -----               |                 |                         |
|         |            | GYRAULUS            | 4               |                         |
|         |            | -----               |                 |                         |
|         |            | LYMNAEA             | 2               |                         |
|         |            | -----               |                 |                         |
|         |            | VALVATA TRICARINATA | 3               |                         |
|         |            | -----               |                 |                         |
|         |            | ALL GASTROPODA      |                 | 1484                    |
|         |            | PELECYPODA          |                 |                         |
|         |            | PISICUM             | 51              | 1054                    |
|         |            | -----               |                 |                         |
|         |            | ALL PELECYPODA      |                 | 1054                    |



## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 16

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 2/19/79 | 1.0        | RHABDUCOELA         | 3               | 62          |
|         |            | TRICLADIDA          | 14              | 289         |
|         |            | NEMATODA            | 32              | 661         |
|         |            | HIRUDINEA           | 4               | 83          |
|         |            | OLIGOCHAETA         | 480             | 9979        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 72              | 1488        |
|         |            | ALL POLYCHAETA      |                 | 1488        |
|         |            | AMPHIPODA           |                 |             |
|         |            | GAMMARUS            | 2               |             |
|         |            | HYALELLA AZTECA     | 136             |             |
|         |            | ALL AMPHIPODA       |                 | 2851        |
|         |            | ISOPODA             |                 |             |
|         |            | AELLUS              | 28              |             |
|         |            | LIRCEUS             | 17              |             |
|         |            | ALL ISOPODA         |                 | 930         |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 13              |             |
|         |            | CHIRONOMIDAE        | 808             | 16693       |
|         |            | EMPHIDIDAE          | 3               |             |
|         |            | ALL DIPTERA         |                 | 17024       |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 2               |             |
|         |            | HEXAGENIA           | 4               |             |
|         |            | EPHEMERELLIDAE      |                 |             |
|         |            | EPHEMERELLA         | 1               |             |
|         |            | ALL EPHEMEROPTERA   |                 | 145         |
|         |            | COLEOPTERA          |                 |             |
|         |            | HALIPLIDAE          | 1               | 21          |
|         |            | ALL COLEOPTERA      |                 | 21          |
|         |            | LEPIDOPTERA         | 33              | 682         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | MYSTACIDES          | 11              |             |
|         |            | POLYCENTROPUS       | 10              |             |
|         |            | ALL TRICHOPTERA     |                 | 434         |
|         |            | ACARINA             | 19              | 393         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 62              |             |
|         |            | GYRAULUS            | 50              |             |
|         |            | LYMNAEA             | 1               |             |
|         |            | VALVATA SINCERA     | 3               |             |
|         |            | VALVATA TRICARINATA | 2               |             |
|         |            | ALL GASTROPODA      |                 | 2438        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 175             | 3615        |
|         |            | ALL PELECYPODA      |                 | 3615        |

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|-------------------------|
| 7/19/79 | 1.0        | REHABDUCFELA        | 6               | 124                     |
|         |            | TRICLACIDA          | 1               | 21                      |
|         |            | NEMATODA            | 102             | 2107                    |
|         |            | HIRUDINFA           | 5               | 103                     |
|         |            | OLIGOCHAETA         | 385             | 7995                    |
|         |            | POLYCHAETA          | .               | .                       |
|         |            | MANAYUNKIA SPECIOSA | 210             | 4339                    |
|         |            | -----               | .               | .                       |
|         |            | ALL POLYCHAETA      | .               | 4339                    |
|         |            | AMPHIPODA           | .               | .                       |
|         |            | GAMMARUS            | 1               | .                       |
|         |            | -----               | .               | .                       |
|         |            | HYALELLA AZTECA     | 71              | .                       |
|         |            | -----               | .               | .                       |
|         |            | ALL AMPHIPODA       | .               | 1488                    |
|         |            | ISOPODA             | .               | .                       |
|         |            | ASELLUS             | 6               | .                       |
|         |            | -----               | .               | .                       |
|         |            | LIRCEUS             | 3               | .                       |
|         |            | -----               | .               | .                       |
|         |            | ALL ISOPODA         | .               | 186                     |
|         |            | DIPTERA             | .               | .                       |
|         |            | CERATOPOGONIDAE     | 20              | .                       |
|         |            | CHIRONOMIDAE        | 230             | 4752                    |
|         |            | EMPHIDAE            | 4               | .                       |
|         |            | ALL DIPTERA         | .               | 5248                    |
|         |            | EPTHEMEROPTERA      | .               | .                       |
|         |            | EPTHEMERIDAE        | .               | .                       |
|         |            | EPTHEMERA           | 2               | .                       |
|         |            | -----               | .               | .                       |
|         |            | HEXAGENIA           | 17              | .                       |
|         |            | -----               | .               | .                       |
|         |            | ALL EPTHEMEROPTERA  | .               | 393                     |
|         |            | LEPIDOPTERA         | 1               | 21                      |
|         |            | TRICHOPTERA         | .               | .                       |
|         |            | MYSTACIDES          | 2               | .                       |
|         |            | -----               | .               | .                       |
|         |            | PHYLOCENTROPUS      | 1               | .                       |
|         |            | -----               | .               | .                       |
|         |            | POLYCENTROPUS       | 3               | .                       |
|         |            | -----               | .               | .                       |
|         |            | ALL TRICHOPTERA     | .               | 124                     |
|         |            | ACARINA             | 15              | 310                     |
|         |            | GASTROPODA          | .               | .                       |
|         |            | AMNICOLA            | 99              | .                       |
|         |            | -----               | .               | .                       |
|         |            | GYRAULUS            | 4               | .                       |
|         |            | -----               | .               | .                       |
|         |            | VALVATA SINCEPA     | 53              | .                       |
|         |            | -----               | .               | .                       |
|         |            | VALVATA TRICAPINATA | 4               | .                       |
|         |            | -----               | .               | .                       |
|         |            | ALL GASTROPODA      | .               | 3306                    |
|         |            | PELECYPODA          | .               | .                       |
|         |            | PISIDIUM            | 257             | 5310                    |
|         |            | -----               | .               | .                       |
|         |            | ALL PELECYPODA      | .               | 5310                    |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 18

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 2/19/79 | 1.0        | RHABDOCOELA         | 1               | 21          |
|         |            | NEMATODA            | 14              | 269         |
|         |            | HIRUDINEA           | 3               | 62          |
|         |            | OLIGOCHAETA         | 104             | 2149        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 14              | 289         |
|         |            | -----               |                 |             |
|         |            | ALL POLYCHAETA      |                 | 289         |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 45              | 930         |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 930         |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 2               | 41          |
|         |            | -----               |                 |             |
|         |            | ALL ISOPODA         |                 | 41          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 25              |             |
|         |            | CHIRONOMIDAE        | 86              | 1777        |
|         |            | ALL DIPTERA         |                 | 2293        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 3               |             |
|         |            | -----               |                 |             |
|         |            | HEXAGENIA           | 10              |             |
|         |            | -----               |                 |             |
|         |            | ALL EPHEMEROPTERA   |                 | 269         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | MOLANNA             | 2               |             |
|         |            | -----               |                 |             |
|         |            | MYSTACINUS          | 5               |             |
|         |            | -----               |                 |             |
|         |            | GECETIS             | 1               |             |
|         |            | -----               |                 |             |
|         |            | POLYCENTROPUS       | 2               |             |
|         |            | -----               |                 |             |
|         |            | ALL TRICHOPTERA     |                 | 207         |
|         |            | ACARINA             | 9               | 186         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 48              |             |
|         |            | -----               |                 |             |
|         |            | GYRACUS             | 1               |             |
|         |            | -----               |                 |             |
|         |            | HELISOMA            | 1               |             |
|         |            | -----               |                 |             |
|         |            | LYMNAEA             | 3               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINCPA      | 48              |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICASPATA  | 3               |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 2149        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISICUM             | 122             | 2521        |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 2521        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 4

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO. |
|---------|------------|---------------------|-----------------|----------|
| 2/19/79 | 3.0        | CNIDARIA            |                 |          |
|         |            | HYDRA               | 14              | 289      |
|         |            | -----               |                 |          |
|         |            | ALL CNIDARIA        |                 | 289      |
|         |            | PHLEBOCOELA         | 3               | 62       |
|         |            | NEMATODA            | 3               | 62       |
|         |            | HIRUDINIA           | 7               | 145      |
|         |            | OLIGOCHAETA         | 122             | 2521     |
|         |            | COPEPODA            | 7               | 145      |
|         |            | OSTRACODA           | 3               | 62       |
|         |            | AMPHIPODA           |                 |          |
|         |            | HYALELLA            | 12              | 248      |
|         |            | -----               |                 |          |
|         |            | ALL AMPHIPOLA       |                 | 248      |
|         |            | ISOPODA             |                 |          |
|         |            | ASELLUS             | 22              |          |
|         |            | -----               |                 |          |
|         |            | LIRCEUS             | 22              |          |
|         |            | -----               |                 |          |
|         |            | ALL ISOPODA         |                 | 309      |
|         |            | DIPTERA             |                 |          |
|         |            | CEPATOPOGONIDAE     | 15              |          |
|         |            | CHIRONOMIDAE        | 370             | 7644     |
|         |            | EMBIIDAE            | 7               |          |
|         |            | ALL DIPTERA         |                 | 8099     |
|         |            | EPHEMEROPTERA       |                 |          |
|         |            | EPHEMERIDAE         |                 |          |
|         |            | HEXAGENIA           | 14              |          |
|         |            | -----               |                 |          |
|         |            | ALL EPHEMEROPTERA   |                 | 289      |
|         |            | COLEOPTERA          | 1               | 21       |
|         |            | TRICHOPTERA         |                 |          |
|         |            | HYSTACIDES          | 5               |          |
|         |            | -----               |                 |          |
|         |            | PHYLGCENTROPUS      | 9               |          |
|         |            | -----               |                 |          |
|         |            | POLYCENTROPUS       | 4               |          |
|         |            | -----               |                 |          |
|         |            | ALL TRICHOPTERA     |                 | 372      |
|         |            | ACARINA             | 8               | 165      |
|         |            | GASTROPODA          |                 |          |
|         |            | AMNICOLA            | 52              |          |
|         |            | -----               |                 |          |
|         |            | GYRAULUS            | 1               |          |
|         |            | -----               |                 |          |
|         |            | PHYSA               | 8               |          |
|         |            | -----               |                 |          |
|         |            | VALVATA SINCERA     | 17              |          |
|         |            | -----               |                 |          |
|         |            | VALVATA TRICARINATA | 1               |          |
|         |            | -----               |                 |          |
|         |            | ALL GASTROPODA      |                 | 1632     |
|         |            | PELLECYPODA         |                 |          |
|         |            | PISIDIUM            | 113             | 2335     |
|         |            | -----               |                 |          |
|         |            | ALL PELLECYPODA     |                 | 2335     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 01

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| DATE    | DEPTH (M.) | TAXON               | --GRAH COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 3/17/79 | 1.0        | CHIRONOMIA          |                 |             |
|         |            | HYPERA              | 17              | 351         |
|         |            | ALL CHIRONOMIA      |                 | 351         |
|         |            | KHANUCOELA          | 9               | 186         |
|         |            | NEMATODA            | 4               | 83          |
|         |            | HIRUDINEA           | 9               | 186         |
|         |            | OLIGCHAETA          | 421             | 8698        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 220             | 4545        |
|         |            | ALL POLYCHAETA      |                 | 4545        |
|         |            | COPEPODA            | 4               | 83          |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 29              | 599         |
|         |            | ALL AMPHIPODA       |                 | 599         |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 4               |             |
|         |            | LIRCEUS             | 2               |             |
|         |            | ALL ISOPODA         |                 | 124         |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 7               |             |
|         |            | CHIRONOMIDAE        | 184             | 3801        |
|         |            | EMPHIDAE            | 13              |             |
|         |            | ALL DIPTERA         |                 | 4215        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | CAENIS              | 1               |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 3               |             |
|         |            | HEXAGENIA           | 5               |             |
|         |            | EPHEMERELLIDAE      |                 |             |
|         |            | EPHEMERELLA         | 1               |             |
|         |            | ALL EPHEMEROPTERA   |                 | 207         |
|         |            | LEPIDOPTERA         | 6               | 124         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | HYDROPTILIDAE       | 1               |             |
|         |            | MYSTACICES          | 7               |             |
|         |            | PHYLOCENTROPUS      | 3               |             |
|         |            | POLYCENTROPUS       | 2               |             |
|         |            | ALL TRICHOPTERA     |                 | 269         |
|         |            | ACARINA             | 8               | 165         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 115             |             |
|         |            | GYRAULUS            | 45              |             |
|         |            | LYNNAEA             | 1               |             |
|         |            | PHYSA               | 4               |             |
|         |            | VALVATA SIMPLEX     | 40              |             |
|         |            | VALVATA TRICARINATA | 27              |             |
|         |            | ALL GASTROPODA      |                 | 4958        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 136             | 2810        |
|         |            | ALL PELECYPODA      |                 | 2810        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 02

| DATE    | DEPTH (M.) | TAXON                | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|----------------------|-----------------|-------------|
| 3/17/79 | 1.0        | CNIDARIA             |                 |             |
|         |            | HYDRA                | 3               | 62          |
|         |            | -----                |                 |             |
|         |            | ALL CNIDARIA         |                 | 62          |
|         |            | OLIGOCHAETA          | 24              | 496         |
|         |            | POLYCHAETA           |                 |             |
|         |            | MAYUNA SPECIOSA      | 1               | 21          |
|         |            | -----                |                 |             |
|         |            | ALL POLYCHAETA       |                 | 21          |
|         |            | COPEPODA             | 3               | 62          |
|         |            | AMPHIPODA            |                 |             |
|         |            | HYALELLA             | 1               | 21          |
|         |            | -----                |                 |             |
|         |            | ALL AMPHIPODA        |                 | 21          |
|         |            | ISOPODA              |                 |             |
|         |            | ASELLUS              | 1               | 21          |
|         |            | -----                |                 |             |
|         |            | ALL ISOPODA          |                 | 21          |
|         |            | DIPTERA              |                 |             |
|         |            | CHIRONOMIDAE         | 72              | 1488        |
|         |            | EMBIIDAE             | 2               |             |
|         |            | ALL DIPTERA          |                 | 1529        |
|         |            | EPHEMEROPTERA        |                 |             |
|         |            | EPHEMERIDAE          |                 |             |
|         |            | EPHEMERA             | 1               |             |
|         |            | -----                |                 |             |
|         |            | ALL EPHEMEROPTERA    |                 | 21          |
|         |            | ACARINA              | 1               | 21          |
|         |            | GASTROPODA           |                 |             |
|         |            | AMNICOLA             | 30              |             |
|         |            | -----                |                 |             |
|         |            | VALVATA SINCERA      | 12              |             |
|         |            | -----                |                 |             |
|         |            | VALVATA TRICAPILLATA | 2               |             |
|         |            | -----                |                 |             |
|         |            | ALL GASTROPODA       |                 | 909         |
|         |            | PELECYPODA           |                 |             |
|         |            | PISICUM              | 9               | 186         |
|         |            | -----                |                 |             |
|         |            | ALL PELECYPODA       |                 | 186         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 03

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|-------------------------|
| 3/17/79 | 1.0        | OLIGOCHAETA         | 32              | 661                     |
|         |            | POLYCHAETA          |                 |                         |
|         |            | MANAYUNKIA SPECIOSA | 1               | 21                      |
|         |            | ALL POLYCHAETA      |                 | 21                      |
|         |            | AMPHIPODA           |                 |                         |
|         |            | HYALELLA            | 3               | 62                      |
|         |            | ALL AMPHIPODA       |                 | 62                      |
|         |            | ISOPODA             |                 |                         |
|         |            | ASELLUS             | 1               | 21                      |
|         |            | ALL ISOPODA         |                 | 21                      |
|         |            | DIPTERA             |                 |                         |
|         |            | GERATEPOGONIDAE     | 1               |                         |
|         |            | CHIRONOMIDAE        | 32              | 661                     |
|         |            | EMPHIDAE            | 1               |                         |
|         |            | ALL DIPTERA         |                 | 702                     |
|         |            | EPEMEROPTERA        |                 |                         |
|         |            | EPHEMERIDAE         |                 |                         |
|         |            | EPHEMERA            | 1               |                         |
|         |            | ALL EPHEMEROPTERA   |                 | 21                      |
|         |            | ACARINA             | 1               | 21                      |
|         |            | GASTROPODA          |                 |                         |
|         |            | AMNICOLA            | 15              |                         |
|         |            | HELISOMA            | 1               |                         |
|         |            | LYMNAEA             | 1               |                         |
|         |            | VALVATA SINICERA    | 6               |                         |
|         |            | VALVATA TRICARINATA | 1               |                         |
|         |            | ALL GASTROPODA      |                 | 496                     |
|         |            | PELECYPODA          |                 |                         |
|         |            | PISICUM             | 7               | 145                     |
|         |            | ALL PELECYPODA      |                 | 145                     |

| DATE    | DEPTH (M.) | TAXA                 | --GRAB COUNTS-- | MEAN NO./M |
|---------|------------|----------------------|-----------------|------------|
| 3/17/79 | 2.0        | CNICARIA             |                 |            |
|         |            | HYDRA                | 38              | 785        |
|         |            | -----                |                 |            |
|         |            | ALL CNICARIA         |                 | 785        |
|         |            | RHARDOCOELA          | 3               | 62         |
|         |            | TRICLADIDA           | 20              | 413        |
|         |            | NEMATODA             | 1               | 21         |
|         |            | HIRUDINEA            | 23              | 475        |
|         |            | OLIGOCOAETA          | 382             | 7872       |
|         |            | POLYCHAETA           |                 |            |
|         |            | MANAYUNKIA SPECIOSA  | 1               | 21         |
|         |            | -----                |                 |            |
|         |            | ALL POLYCHAETA       |                 | 21         |
|         |            | OSTRACODA            | 1               | 21         |
|         |            | AMPHIPODA            |                 |            |
|         |            | GAMMARUS             | 1               |            |
|         |            | -----                |                 |            |
|         |            | HYALELLA             | 53              |            |
|         |            | -----                |                 |            |
|         |            | ALL AMPHIPODA        |                 | 1116       |
|         |            | ISOPODA              |                 |            |
|         |            | ASELLUS              | 117             |            |
|         |            | -----                |                 |            |
|         |            | LIRCEUS              | 52              |            |
|         |            | -----                |                 |            |
|         |            | ALL ISOPODA          |                 | 3492       |
|         |            | DIPTERA              |                 |            |
|         |            | CERATOPOGONIDAE      | 4               |            |
|         |            | CHIRONOMIDAE         | 675             | 13945      |
|         |            | EMBIIDAE             | 1               |            |
|         |            | SIMULIIDAE           | 4               |            |
|         |            | ALL DIPTERA          |                 | 14131      |
|         |            | EPTHEMEROPTERA       |                 |            |
|         |            | EPTHEMERIDAE         |                 |            |
|         |            | HEXAGENIA            | 3               |            |
|         |            | -----                |                 |            |
|         |            | ALL EPTHEMEROPTERA   |                 | 62         |
|         |            | LEPIDOPTERA          | 2               | 41         |
|         |            | TRICHOPTERA          |                 |            |
|         |            | AGRYPNIA             | 1               |            |
|         |            | -----                |                 |            |
|         |            | MYSTACIDES           | 5               |            |
|         |            | -----                |                 |            |
|         |            | PHYLCENTROPUS        | 9               |            |
|         |            | -----                |                 |            |
|         |            | POLYCENTROPUS        | 6               |            |
|         |            | -----                |                 |            |
|         |            | ALL TRICHOPTERA      |                 | 434        |
|         |            | GASTROPODA           |                 |            |
|         |            | AMNICOLA             | 432             |            |
|         |            | -----                |                 |            |
|         |            | CAMPLOMA             | 4               |            |
|         |            | -----                |                 |            |
|         |            | GONIOBASIS LIVASCHUS | 5               |            |
|         |            | -----                |                 |            |
|         |            | GYRAULUS             | 52              |            |
|         |            | -----                |                 |            |
|         |            | HELISOMA             | 1               |            |
|         |            | -----                |                 |            |
|         |            | PHYSA                | 50              |            |
|         |            | -----                |                 |            |
|         |            | VALVATA SINGERA      | 104             |            |
|         |            | -----                |                 |            |
|         |            | VALVATA INCAPITATA   | 272             |            |
|         |            | -----                |                 |            |
|         |            | ALL GASTROPODA       |                 | 19007      |
|         |            | PELECYPODA           |                 |            |
|         |            | PESTIUM              | 265             | 5475       |
|         |            | -----                |                 |            |
|         |            | ALL PELECYPODA       |                 | 5475       |



| TE      | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 3/17/79 | 1.0        | RHAPTOSCELLA        | 2               | 41          |
|         |            | NEMATODA            | 6               | 124         |
|         |            | HIRUDINEA           | 6               | 124         |
|         |            | OLIGOCHEATA         | 123             | 2541        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 48              | 992         |
|         |            | -----               |                 |             |
|         |            | ALL POLYCHAETA      |                 | 992         |
|         |            | COPEPODA            | 1               | 21          |
|         |            | OSTRACODA           | 6               | 124         |
|         |            | AMPHIPODA           |                 |             |
|         |            | GAMMARUS            | 1               |             |
|         |            | -----               |                 |             |
|         |            | HYALELLA AZTECA     | 9               |             |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 207         |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL ISOPODA         |                 | 21          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 4               |             |
|         |            | CHIRONOMIDAE        | 291             | 6012        |
|         |            | EMPHIDAE            | 6               |             |
|         |            | ALL DIPTERA         |                 | 6219        |
|         |            | EPTHEMEROPTERA      |                 |             |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | CAENIS              | 2               |             |
|         |            | -----               |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 2               |             |
|         |            | -----               |                 |             |
|         |            | PLAXIGENIA          | 2               |             |
|         |            | -----               |                 |             |
|         |            | ALL EPHEMEROPTERA   |                 | 124         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | HYDROPTILA          | 1               |             |
|         |            | -----               |                 |             |
|         |            | MYSTACIDES          | 1               |             |
|         |            | -----               |                 |             |
|         |            | POLYCENTROPUS       | 2               |             |
|         |            | -----               |                 |             |
|         |            | ALL TRICHOPTERA     |                 | 83          |
|         |            | ACARINA             | 8               | 165         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICULA            | 130             |             |
|         |            | -----               |                 |             |
|         |            | GYRAULUS            | 8               |             |
|         |            | -----               |                 |             |
|         |            | PELISCIA            | 8               |             |
|         |            | -----               |                 |             |
|         |            | LYMNATA             | 9               |             |
|         |            | -----               |                 |             |
|         |            | PHYSA               | 1               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINCERA     | 14              |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICARINATA | 66              |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 4876        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 64              | 1322        |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 1322        |

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 3/17/79 | 1.0        | CNIDARIA            |                 |             |
|         |            | HYDRA               | 12              | 248         |
|         |            | ALL CNIDARIA        |                 | 248         |
|         |            | NEMATODA            | 33              | 682         |
|         |            | OLIGONECTA          | 122             | 2521        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 279             | 5681        |
|         |            | ALL POLYCHAETA      |                 | 5681        |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA AZTECA     | 11              | 227         |
|         |            | ALL AMPHIPODA       |                 | 227         |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 9               |             |
|         |            | CHIRONOMIDAE        | 290             | 5991        |
|         |            | EMPHIDAE            | 5               |             |
|         |            | SIMULIIDAE          | 1               |             |
|         |            | ALL DIPTERA         |                 | 6301        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 1               |             |
|         |            | HEXAGENIA           | 5               |             |
|         |            | ALL EPHEMEROPTERA   |                 | 124         |
|         |            | LEPIDOPTERA         | 1               | 21          |
|         |            | TRICHOPTERA         |                 |             |
|         |            | MYSTACIDES          | 5               | 103         |
|         |            | ALL TRICHOPTERA     |                 | 103         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNIOCOLA           | 61              |             |
|         |            | CYRAULUS            | 17              |             |
|         |            | HELISMA             | 2               |             |
|         |            | LYMAEA              | 4               |             |
|         |            | VALVATA SINCERA     | 39              |             |
|         |            | VALVATA TRICAPINATA | 136             |             |
|         |            | ALL GASTROPODA      |                 | 5805        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 45              | 930         |
|         |            | ALL PELECYPODA      |                 | 930         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 08

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 3/17/79 | 1.0        | CILIARIA            |                 |             |
|         |            | HYDRA               | 5               | 103         |
|         |            | -----               |                 |             |
|         |            | ALL CNIDARIA        |                 | 103         |
|         |            | RHABDOCOELA         | 1               | 21          |
|         |            | NEMATODA            | 6               | 124         |
|         |            | HIRUDINEA           | 1               | 21          |
|         |            | OLIGOCHAETA         | 32              | 661         |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 10              | 207         |
|         |            | -----               |                 |             |
|         |            | ALL POLYCHAETA      |                 | 207         |
|         |            | OSTRACODA           | 1               | 21          |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA AZTECA     | 2               | 41          |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 41          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 4               |             |
|         |            | CHIRONOMIDAE        | 73              | 1508        |
|         |            | EMBIIDIDAE          | 1               |             |
|         |            | ALL DIPTERA         |                 | 1611        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | HEXAGENIA           | 1               |             |
|         |            | -----               |                 |             |
|         |            | ALL EPHEMEROPTERA   |                 | 21          |
|         |            | TRICHOPTERA         |                 |             |
|         |            | POLYCENTROPUS       | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL TRICHOPTERA     |                 | 21          |
|         |            | ACARINA             | 3               | 62          |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 2               |             |
|         |            | -----               |                 |             |
|         |            | GYRAULUS            | 9               |             |
|         |            | -----               |                 |             |
|         |            | HELISOMA            | 1               |             |
|         |            | -----               |                 |             |
|         |            | PHYSA               | 2               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINCERA     | 19              |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICARINATA | 3               |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 744         |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 12              | 248         |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 248         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 09

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 3/17/79 | 2.0        | CNIDARIA            |                 |             |
|         |            | HYDRA               | 15              | 310         |
|         |            | -----               |                 |             |
|         |            | ALL CNIDARIA        |                 | 310         |
|         |            | RHABDOCOELA         | 1               | 21          |
|         |            | HIRUDINEA           | 2               | 41          |
|         |            | OLIGOCHAETA         | 136             | 2810        |
|         |            | AMPHIPODA           |                 |             |
|         |            | GAMMARUS            | 1               |             |
|         |            | -----               |                 |             |
|         |            | HYALELLA AZTECA     | 2               |             |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 62          |
|         |            | ISPODA              |                 |             |
|         |            | ASELLUS             | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL ISPODA          |                 | 21          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 2               |             |
|         |            | CHIRONOMIDAE        | 130             | 2686        |
|         |            | EMPHIDAE            | 3               |             |
|         |            | ALL DIPTERA         |                 | 2789        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 2               |             |
|         |            | -----               |                 |             |
|         |            | HEXAGENIA           | 16              |             |
|         |            | -----               |                 |             |
|         |            | ALL EPHEMEROPTERA   |                 | 372         |
|         |            | LEPIDOPTERA         | 1               | 21          |
|         |            | TRICHOPTERA         |                 |             |
|         |            | HYDROPTILIDAE       | 1               |             |
|         |            | -----               |                 |             |
|         |            | HYSTACIDES          | 2               |             |
|         |            | -----               |                 |             |
|         |            | POLYCENTROPUS       | 1               |             |
|         |            | -----               |                 |             |
|         |            | ALL TRICHOPTERA     |                 | 63          |
|         |            | ACARINA             | 1               | 21          |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 61              |             |
|         |            | -----               |                 |             |
|         |            | GYRAULUS            | 16              |             |
|         |            | -----               |                 |             |
|         |            | PELISOMA            | 18              |             |
|         |            | -----               |                 |             |
|         |            | PHYSA               | 1               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINCERA     | 76              |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICAPITATA | 64              |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 4917        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 56              | 1157        |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 1157        |

| DATE    | DEPTH (M.) | TAXON               | --GRAH COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|-------------------------|
| 3/16/77 | 1.0        | CHIDARIA            |                 |                         |
|         |            | HYDRA               | 4               | 83                      |
|         |            | ALL CHIDARIA        |                 | 83                      |
|         |            | RHARDOCOELA         | 1               | 21                      |
|         |            | NEMATODA            | 11              | 227                     |
|         |            | MIRACIDIA           | 6               | 124                     |
|         |            | OLIGOCYCLA          | 145             | 3016                    |
|         |            | POLYCHAETA          |                 |                         |
|         |            | MANAYUNKIA SPECIOSA | 12              | 248                     |
|         |            | ALL POLYCHAETA      |                 | 248                     |
|         |            | AMPHIPODA           |                 |                         |
|         |            | GAMMARUS            | 2               |                         |
|         |            | HYALELLA AZTECA     | 34              |                         |
|         |            | ALL AMPHIPODA       |                 | 744                     |
|         |            | ISOPODA             |                 |                         |
|         |            | ASELLUS             | 1               |                         |
|         |            | LIRCEUS             | 4               |                         |
|         |            | ALL ISOPODA         |                 | 103                     |
|         |            | DIPTERA             |                 |                         |
|         |            | CERATOPOGONIDAE     | 26              |                         |
|         |            | CHIRONOMIDAE        | 105             | 2169                    |
|         |            | EMPHIDAE            | 5               |                         |
|         |            | ALL DIPTERA         |                 | 2810                    |
|         |            | EPHEMEROPTERA       |                 |                         |
|         |            | EPHEMEROPTERA       |                 |                         |
|         |            | CAENIS              | 5               |                         |
|         |            | EPHEMERIDAE         |                 |                         |
|         |            | EPHEMERA            | 2               |                         |
|         |            | HEXAGENIA           | 13              |                         |
|         |            | ALL EPHEMEROPTERA   |                 | 413                     |
|         |            | COLEOPTERA          |                 |                         |
|         |            | HEMIPHYLLIDAE       | 3               | 62                      |
|         |            | ALL COLEOPTERA      |                 | 62                      |
|         |            | LEPIDOPTERA         | 3               | 62                      |
|         |            | TRICHOPTERA         |                 |                         |
|         |            | HYSTACIDES          | 3               |                         |
|         |            | POLYCENTROPUS       | 1               |                         |
|         |            | ALL TRICHOPTERA     |                 | 83                      |
|         |            | ACAPHA              | 3               | 62                      |
|         |            | GASTROPODA          |                 |                         |
|         |            | AMNICOLA            | 36              |                         |
|         |            | GYPHAULUS           | 8               |                         |
|         |            | HELISCLA            | 3               |                         |
|         |            | LYMNALIA            | 1               |                         |
|         |            | PHYSA               | 6               |                         |
|         |            | VALVATA SINCERA     | 95              |                         |
|         |            | VALVATA TRICARINATA | 44              |                         |
|         |            | ALL GASTROPODA      |                 | 3987                    |
|         |            | PELECYPODA          |                 |                         |
|         |            | PISIDIUM            | 82              | 1694                    |
|         |            | ALL PELECYPODA      |                 | 1694                    |

## MACROBENTHOS OF THE ST. PARYS RIVER

| DATE    | DEPTH (M.) | TAXON               | STATION         |          |
|---------|------------|---------------------|-----------------|----------|
|         |            |                     | --GRAH COUNTS-- | HEAR NO. |
| 3/16/79 | 1.0        | CNIDARIA            |                 |          |
|         |            | HYDRA               | 2               | 41       |
|         |            | ALL CNIDARIA        |                 | 41       |
|         |            | RHABDOCOELA         | 1               | 21       |
|         |            | NEKATODA            | 99              | 2045     |
|         |            | HIRUDINEA           | 3               | 62       |
|         |            | OLIGOCHAETA         | 666             | 13760    |
|         |            | POLYCHAETA          |                 |          |
|         |            | MANAYUNKIA SPECIOSA | 139             | 2872     |
|         |            | ALL POLYCHAETA      |                 | 2872     |
|         |            | CUPEPCEA            | 1               | 21       |
|         |            | AMPHIPODA           |                 |          |
|         |            | GAMMARUS            | 2               |          |
|         |            | HYALFELLA AZTECA    | 12              |          |
|         |            | ALL AMPHIPODA       |                 | 289      |
|         |            | ISOPODA             |                 |          |
|         |            | ASELLUS             | 6               |          |
|         |            | LITCEUS             | 7               |          |
|         |            | ALL ISOPODA         |                 | 269      |
|         |            | DIPTERA             |                 |          |
|         |            | CERATOPOGONIDAE     | 12              |          |
|         |            | CHIRONOMIDAE        | 162             | 3347     |
|         |            | EMPHIDIDAE          | 4               |          |
|         |            | ALL DIPTERA         |                 | 3677     |
|         |            | EPHEMEROPTERA       |                 |          |
|         |            | EPHEMERIDAE         |                 |          |
|         |            | EPHEMERA            | 3               |          |
|         |            | HEXAGENIA           | 13              |          |
|         |            | ALL EPHEMEROPTERA   |                 | 331      |
|         |            | COLEOPTERA          |                 |          |
|         |            | HALIPIDAE           | 2               | 41       |
|         |            | ALL COLEOPTERA      |                 | 41       |
|         |            | TRICHOPTERA         |                 |          |
|         |            | HYDROPTILA          | 2               |          |
|         |            | MYSTACINES          | 9               |          |
|         |            | ALL TRICHOPTERA     |                 | 227      |
|         |            | ACARINA             | 6               | 124      |
|         |            | GASTROPODA          |                 |          |
|         |            | AMNICULA            | 62              |          |
|         |            | GYRAULUS            | 14              |          |
|         |            | PELISMA             | 2               |          |
|         |            | PHYSA               | 1               |          |
|         |            | VALVATA SINCERA     | 7               |          |
|         |            | VALVATA TRICAPINATA | 50              |          |
|         |            | ALL GASTROPODA      |                 | 2019     |
|         |            | PELICYPEDA          |                 |          |
|         |            | PISIDIUM            | 95              | 1003     |
|         |            | ALL PELICYPEDA      |                 | 1003     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 13

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|-------------------------|
| 3/16/79 | 1.0        | RHABDOCELA          | 1               | 21                      |
|         |            | NEMATODA            | 2               | 41                      |
|         |            | OLIGOCHAETA         | 117             | 2417                    |
|         |            | POLYCHAETA          |                 |                         |
|         |            | NARAYUNKIA SPECIOSA | 49              | 1012                    |
|         |            | -----               |                 |                         |
|         |            | ALL POLYCHAETA      |                 | 1012                    |
|         |            | AMPHIPODA           |                 |                         |
|         |            | HYALELLA AZTECA     | 5               | 103                     |
|         |            | -----               |                 |                         |
|         |            | ALL AMPHIPODA       |                 | 103                     |
|         |            | ISOPODA             |                 |                         |
|         |            | LIRCEUS             | 2               | 41                      |
|         |            | -----               |                 |                         |
|         |            | ALL ISOPODA         |                 | 41                      |
|         |            | DIPTERA             |                 |                         |
|         |            | CERATOPOGONIDAE     | 4               |                         |
|         |            | CHIRONOMIDAE        | 89              | 1839                    |
|         |            | EPIPIDAE            | 5               |                         |
|         |            | ALL DIPTERA         |                 | 2025                    |
|         |            | EPHEMEROPTERA       |                 |                         |
|         |            | EPHEMERIDAE         |                 |                         |
|         |            | EPHEMERA            | 2               |                         |
|         |            | -----               |                 |                         |
|         |            | ALL EPHEMEROPTERA   |                 | 41                      |
|         |            | COLEOPTERA          |                 |                         |
|         |            | PALIPIDAE           | 1               | 21                      |
|         |            | -----               |                 |                         |
|         |            | ALL COLEOPTERA      |                 | 21                      |
|         |            | TRICHOPTERA         |                 |                         |
|         |            | HYSTACIDAE          | 2               |                         |
|         |            | -----               |                 |                         |
|         |            | OECETIS             | 1               |                         |
|         |            | -----               |                 |                         |
|         |            | ALL TRICHOPTERA     |                 | 62                      |
|         |            | ACAPINA             | 7               | 145                     |
|         |            | GASTROPODA          |                 |                         |
|         |            | MUNICULA            | 94              |                         |
|         |            | -----               |                 |                         |
|         |            | GYRAEUS             | 11              |                         |
|         |            | -----               |                 |                         |
|         |            | LYMNAEA             | 1               |                         |
|         |            | -----               |                 |                         |
|         |            | VALVATA SINUATA     | 15              |                         |
|         |            | -----               |                 |                         |
|         |            | VALVATA TRICAPITATA | 123             |                         |
|         |            | -----               |                 |                         |
|         |            | ALL GASTROPODA      |                 | 5041                    |
|         |            | PELECYPODA          |                 |                         |
|         |            | PISIDIUM            | 46              | 950                     |
|         |            | -----               |                 |                         |
|         |            | ALL PELECYPODA      |                 | 950                     |

## MACROINVERTEBRATES OF THE ST. MARYS RIVER

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STATION 14

| DATE    | DEPTH (M.) | TAXA                 | GRAB COUNTS | MEAN NO./M <sup>2</sup> |
|---------|------------|----------------------|-------------|-------------------------|
| 3/16/79 | 2.0        | CNIDARIA             |             |                         |
|         |            | HYDRA                | 31          | 640                     |
|         |            | ALL CNIDARIA         |             | 640                     |
|         |            | RHABDOCELA           | 9           | 186                     |
|         |            | TRICLADIDA           | 1           | 21                      |
|         |            | NEMATODA             | 61          | 1260                    |
|         |            | HIRUDINEA            | 4           | 83                      |
|         |            | OLIGOCHAETA          | 231         | 4772                    |
|         |            | POLYCHAETA           |             |                         |
|         |            | MALAYUKIA SPECIOSA   | 204         | 4215                    |
|         |            | ALL POLYCHAETA       |             | 4215                    |
|         |            | OSTRACCA             | 14          | 289                     |
|         |            | AMPHIROCA            |             |                         |
|         |            | CAMPARUS             | 1           |                         |
|         |            | HYALELLA AZTECA      | 47          |                         |
|         |            | ALL AMPHIPODA        |             | 992                     |
|         |            | ISOPODA              |             |                         |
|         |            | ASELLUS              | 5           |                         |
|         |            | LIRCEUS              | 13          |                         |
|         |            | ALL ISOPODA          |             | 372                     |
|         |            | DIPTERA              |             |                         |
|         |            | CERATOPOGONIDAE      | 35          |                         |
|         |            | CHIRONOMIDAE         | 337         | 6962                    |
|         |            | EMPHIDIDAE           | 3           |                         |
|         |            | ALL DIPTERA          |             | 7747                    |
|         |            | EPHEMEROPTERA        |             |                         |
|         |            | EPHEMERIDAE          |             |                         |
|         |            | EPHEMERA             | 3           |                         |
|         |            | HEMIBAETIS           | 10          |                         |
|         |            | ALL EPHEMEROPTERA    |             | 269                     |
|         |            | LEPIDOPTERA          | 3           | 62                      |
|         |            | TRICHOPTERA          |             |                         |
|         |            | HYSTERICIDAE         | 6           |                         |
|         |            | PHYLLICENTROPUS      | 4           |                         |
|         |            | POLYCENTROPUS        | 3           |                         |
|         |            | ALL TRICHOPTERA      |             | 269                     |
|         |            | ACARINA              | 24          | 496                     |
|         |            | GASTROPODA           |             |                         |
|         |            | AMNIOGASTRA          | 108         |                         |
|         |            | CYNALUS              | 41          |                         |
|         |            | FUSUS                | 26          |                         |
|         |            | LYGIDAE              | 9           |                         |
|         |            | PISYA                | 2           |                         |
|         |            | VALVATA SINCPA       | 272         |                         |
|         |            | VALVATA TRICLADIDATA | 7           |                         |
|         |            | ALL GASTROPODA       |             | 5607                    |
|         |            | PELICYPODA           |             |                         |
|         |            | PISIDIA              | 124         | 2562                    |
|         |            | ALL PELICYPODA       |             | 2562                    |



## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 15

| DATE    | DEPTH (M.) | TAXON                | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|----------------------|-----------------|-------------------------|
| 3/16/79 | 3.0        | CNIDARIA             |                 |                         |
|         |            | HYDRA                | 25              | 516                     |
|         |            | -----                |                 |                         |
|         |            | ALL CNIDARIA         |                 | 516                     |
|         |            | RHABDIOCOLLA         | 2               | 41                      |
|         |            | NEMATODA             | 4               | 83                      |
|         |            | HIRUDINEA            | 7               | 145                     |
|         |            | OLIGOCHAETA          | 92              | 1901                    |
|         |            | POLYCHAETA           |                 |                         |
|         |            | MANAYUNKIA SPECIOSA  | 19              | 393                     |
|         |            | -----                |                 |                         |
|         |            | ALL POLYCHAETA       |                 | 393                     |
|         |            | OSTRACODA            | 8               | 165                     |
|         |            | AMPHIPODA            |                 |                         |
|         |            | HYALELLA             | 2               | 41                      |
|         |            | -----                |                 |                         |
|         |            | ALL AMPHIPODA        |                 | 41                      |
|         |            | DIPTERA              |                 |                         |
|         |            | CERATOPOGONIDAE      | 15              |                         |
|         |            | CHIRONOMIDAE         | 268             | 5537                    |
|         |            | EMPHIDAE             | 5               |                         |
|         |            | SIMULIIDAE           | 1               |                         |
|         |            | ALL DIPTERA          |                 | 5971                    |
|         |            | EPHEMEROPTERA        |                 |                         |
|         |            | EPHEMERIDAL          |                 |                         |
|         |            | HEXAGENIA            | 11              |                         |
|         |            | -----                |                 |                         |
|         |            | ALL EPHEMEROPTERA    |                 | 227                     |
|         |            | LEPIDOPTERA          | 2               | 41                      |
|         |            | TRICHOPTERA          |                 |                         |
|         |            | HYDROPTILIDAE        | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | NOGANA               | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | MYSTACIDES           | 4               |                         |
|         |            | -----                |                 |                         |
|         |            | PHYLLICENTROPUS      | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | ALL TRICHOPTERA      |                 | 145                     |
|         |            | ACARINA              | 9               | 186                     |
|         |            | GASTROPODA           |                 |                         |
|         |            | AMNICULA             | 17              |                         |
|         |            | -----                |                 |                         |
|         |            | GYRAULUS             | 4               |                         |
|         |            | -----                |                 |                         |
|         |            | HELISOMA             | 2               |                         |
|         |            | -----                |                 |                         |
|         |            | PHYSA                | 1               |                         |
|         |            | -----                |                 |                         |
|         |            | VALVATA SINGERA      | 27              |                         |
|         |            | -----                |                 |                         |
|         |            | VALVATA TRICARTINATA | 4               |                         |
|         |            | -----                |                 |                         |
|         |            | ALL GASTROPODA       |                 | 1136                    |
|         |            | PELECYPODA           |                 |                         |
|         |            | PESTIGIUM            | 95              | 1136                    |
|         |            | -----                |                 |                         |
|         |            | ALL PELECYPODA       |                 | 1136                    |

| DATE    | DEPTH (M.) | TAXON                             | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|-----------------------------------|-----------------|-------------------------|
| 3/16/79 | 1.0        | CNIDARIA<br>HYDRA                 | 4               | 83                      |
|         |            | ALL CNIDARIA                      |                 | 83                      |
|         |            | RHABDOCELA                        | 7               | 145                     |
|         |            | NEMATODA                          | 6               | 124                     |
|         |            | HIRUDINEA                         | 20              | 413                     |
|         |            | OLIGOCHAETA                       | 268             | 5537                    |
|         |            | POLYCHAETA<br>MANAYUNKIA SPECIOSA | 34              | 702                     |
|         |            | ALL POLYCHAETA                    |                 | 702                     |
|         |            | COPEPODA                          | 1               | 21                      |
|         |            | OSTRACODA                         | 1               | 21                      |
|         |            | AMPHIPODA<br>HYALELLA             | 226             | 4669                    |
|         |            | ALL AMPHIPODA                     |                 | 4669                    |
|         |            | ISOPODA<br>ASELLUS                | 19              |                         |
|         |            | LIRCEUS                           | 23              |                         |
|         |            | ALL ISOPODA                       |                 | 868                     |
|         |            | DIPTERA<br>CERATOPOGONIDAE        | 21              |                         |
|         |            | CHIRONOMIDAE                      | 599             | 12375                   |
|         |            | EMPHIDAE                          | 2               |                         |
|         |            | ALL DIPTERA                       |                 | 12651                   |
|         |            | EPTHEMEROPTERA<br>EPTHEMERIDAE    | 3               |                         |
|         |            | HEXAGENIA                         | 7               |                         |
|         |            | ALL EPTHEMEROPTERA                |                 | 207                     |
|         |            | LEPIDOPTERA                       | 33              | 682                     |
|         |            | TRICHOPTERA<br>HYSTACIDAE         | 8               |                         |
|         |            | PHYCOCENTROPUS                    | 3               |                         |
|         |            | POLYCENTROPUS                     | 16              |                         |
|         |            | ALL TRICHOPTERA                   |                 | 558                     |
|         |            | HEMIPTERA<br>CORIXIDAE            | 2               | 41                      |
|         |            | ACARIDA                           | 33              | 682                     |
|         |            | GASTROPODA<br>ARTICULAR           | 120             |                         |
|         |            | CAMPIDOMA                         | 1               |                         |
|         |            | GYRAULUS                          | 56              |                         |
|         |            | LYMNIA                            | 2               |                         |
|         |            | VALVATA SPINOSA                   | 63              |                         |
|         |            | VALVATA TRICARINATA               | 9               |                         |
|         |            | ALL GASTROPODA                    |                 | 5271                    |
|         |            | PELECYPODA<br>PISIDIA             | 241             | 4979                    |
|         |            | ALL PELECYPODA                    |                 | 4979                    |

## MACROINVERTEBRATES OF THE ST. MARYS RIVER

STATION 17

| DATE    | DEPTH (M.) | TAXON               | --GRAH COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 3/16/79 | 1.0        | RHABDOCOLLA         | 3               | 62          |
|         |            | NEMATODA            | 10              | 372         |
|         |            | HIRUDINEA           | 1               | 21          |
|         |            | OLIGOCHAETA         | 39              | 806         |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYANKIA SPECIOSA | 19              | 393         |
|         |            | ALL POLYCHAETA      |                 | 393         |
|         |            | OSTRACODA           | 12              | 248         |
|         |            | AMPHIPODA           |                 |             |
|         |            | GAMMARUS            | 1               |             |
|         |            | HYALINELLA AZTECA   | 51              |             |
|         |            | ALL AMPHIPODA       |                 | 1074        |
|         |            | ISOPODA             |                 |             |
|         |            | ASPELUS             | 11              |             |
|         |            | LIRCEUS             | 11              |             |
|         |            | ALL ISOPODA         |                 | 455         |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 19              |             |
|         |            | CHIRONOMIDAE        | 191             | 3946        |
|         |            | EMPHIDAE            | 2               |             |
|         |            | ALL DIPTERA         |                 | 4380        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMEROPIDAE       |                 |             |
|         |            | CAENIS              | 2               |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 2               |             |
|         |            | HEXAGENIA           | 6               |             |
|         |            | ALL EPHEMEROPTERA   |                 | 207         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | NOLETIA             | 2               |             |
|         |            | HYSTACIDUS          | 3               |             |
|         |            | PHYCOTRICHUS        | 5               |             |
|         |            | ALL TRICHOPTERA     |                 | 207         |
|         |            | ACARIDA             | 8               | 165         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 69              |             |
|         |            | CYRABULUS           | 1               |             |
|         |            | VALVATA SINICUS     | 71              |             |
|         |            | VALVATA TRICAPITATA | 1               |             |
|         |            | ALL GASTROPODA      |                 | 2746        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISTILIA            | 117             |             |
|         |            | SPILASTREA          | 1               |             |
|         |            | ALL PELECYPODA      |                 | 2436        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 18

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 3/16/79 | 1.0       | NEMATODA            | 5               | 103         |
|         |           | HIRUDINEA           | 1               | 21          |
|         |           | OLIGOCHAETA         | 125             | 2562        |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 37              | 764         |
|         |           | ALL POLYCHAETA      |                 | 764         |
|         |           | OSTRACODA           | 6               | 124         |
|         |           | AMPHIPODA           |                 |             |
|         |           | HYALILLA AZTECA     | 18              | 372         |
|         |           | ALL AMPHIPODA       |                 | 372         |
|         |           | DIPTERA             |                 |             |
|         |           | CERATOPOGONIDAE     | 19              |             |
|         |           | CHIRONOMIDAE        | 89              | 1839        |
|         |           | EMPIDIDAE           | 2               |             |
|         |           | ALL DIPTERA         |                 | 2273        |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | EPHEMEROPTERA       |                 |             |
|         |           | CAENIS              | 1               |             |
|         |           | EPHEMERIDAE         |                 |             |
|         |           | EPHEMERA            | 4               |             |
|         |           | HEXAGENIA           | 11              |             |
|         |           | ALL EPHEMEROPTERA   |                 | 331         |
|         |           | TRICHOPTERA         |                 |             |
|         |           | MYSTACIDES          | 6               | 124         |
|         |           | ALL TRICHOPTERA     |                 | 124         |
|         |           | HEMIPTERA           |                 |             |
|         |           | CORIXIDAE           | 1               | 21          |
|         |           | ACARINA             |                 |             |
|         |           | ARRENURUS           | 1               |             |
|         |           | OTHER               | 10              |             |
|         |           | ALL ACARINA         |                 | 227         |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 105             |             |
|         |           | LYNNAEA             | 2               |             |
|         |           | VALVATA SINGERA     | 7               |             |
|         |           | VALVATA TRICARINATA | 7               |             |
|         |           | ALL GASTROPODA      |                 | 2500        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISIDIUM            | 84              | 1735        |
|         |           | ALL PELECYPODA      |                 | 1735        |

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|-------------------------|
| 3/16/79 | 2.0        | CNIDARIA            |                 |                         |
|         |            | HYDRA               | 1               | 21                      |
|         |            | -----               |                 |                         |
|         |            | ALL CNIDARIA        |                 | 21                      |
|         |            | RHABDOCOELA         | 6               | 165                     |
|         |            | TRICLADIDA          | 41              | 847                     |
|         |            | NEMATODA            | 21              | 434                     |
|         |            | HIRUDINEA           | 1               | 21                      |
|         |            | OLIGOCHAETA         | 154             | 3182                    |
|         |            | POLYCHAETA          |                 |                         |
|         |            | MANAYUNKIA SPECIOSA | 1               | 21                      |
|         |            | -----               |                 |                         |
|         |            | ALL POLYCHAETA      |                 | 21                      |
|         |            | OSTRACODA           | 3               | 62                      |
|         |            | AMPHIPODA           |                 |                         |
|         |            | HYALELLA AZTECA     | 20              | 413                     |
|         |            | -----               |                 |                         |
|         |            | ALL AMPHIPODA       |                 | 413                     |
|         |            | ISOPODA             |                 |                         |
|         |            | ASELLUS             | 3               |                         |
|         |            | -----               |                 |                         |
|         |            | LIRCEUS             | 9               |                         |
|         |            | -----               |                 |                         |
|         |            | ALL ISOPODA         |                 | 248                     |
|         |            | DIPTERA             |                 |                         |
|         |            | CERATOPOGONIDAE     | 34              |                         |
|         |            | CHIRONOMIDAE        | 262             | 5826                    |
|         |            | EMPHIDIDAE          | 7               |                         |
|         |            | ALL DIPTERA         |                 | 6673                    |
|         |            | EPHEMEROPTERA       |                 |                         |
|         |            | EPHEMERIDAE         |                 |                         |
|         |            | EPHEMERA            | 2               |                         |
|         |            | -----               |                 |                         |
|         |            | HEXAGENIA           | 20              |                         |
|         |            | -----               |                 |                         |
|         |            | ALL EPHEMEROPTERA   |                 | 455                     |
|         |            | LEPIDOPTERA         | 1               | 21                      |
|         |            | TRICHOPTERA         |                 |                         |
|         |            | HYSTACIDES          | 13              |                         |
|         |            | -----               |                 |                         |
|         |            | PHYLOCENTROPUS      | 3               |                         |
|         |            | -----               |                 |                         |
|         |            | POLYCENTROPUS       | 5               |                         |
|         |            | -----               |                 |                         |
|         |            | TRIAPHODES          | 7               |                         |
|         |            | -----               |                 |                         |
|         |            | ALL TRICHOPTERA     |                 | 578                     |
|         |            | HEMIPTERA           |                 |                         |
|         |            | CORIXIDAE           | 2               | 41                      |
|         |            | ACARTIA             | 16              | 331                     |
|         |            | GASTROPODA          |                 |                         |
|         |            | ANODONTA            | 44              |                         |
|         |            | -----               |                 |                         |
|         |            | GYRINIDAE           | 3               |                         |
|         |            | -----               |                 |                         |
|         |            | PHYSA               | 3               |                         |
|         |            | -----               |                 |                         |
|         |            | VALVATA INDOCA      | 28              |                         |
|         |            | -----               |                 |                         |
|         |            | VALVATA TRICORNATA  | 4               |                         |
|         |            | -----               |                 |                         |
|         |            | ALL GASTROPODA      |                 | 1107                    |
|         |            | PELECYPODA          |                 |                         |
|         |            | PENIDAE             | 139             | 2606                    |
|         |            | -----               |                 |                         |
|         |            | ALL PELECYPODA      |                 | 2606                    |

## MACROBENTHOS OF THE STA. MARYS RIVER

STATION 2

| DATE    | DEPTH (M.) | TAXON             | --GRAB COUNTS-- | MEAN NO./ |
|---------|------------|-------------------|-----------------|-----------|
| 3/16/79 | 3.0        | CNIDARIA          |                 |           |
|         |            | HYDRA             | 2               | 41        |
|         |            | -----             |                 |           |
|         |            | ALL CNIDARIA      |                 | 41        |
|         |            | RHABDOCELA        | 1               | 21        |
|         |            | TRICLADIDA        | 3               | 62        |
|         |            | NEMATODA          | 21              | 434       |
|         |            | HIRUDINEA         | 1               | 21        |
|         |            | OLIGOCHAETA       | 105             | 2169      |
|         |            | COPEPODA          | 2               | 41        |
|         |            | OSTRACODA         | 1               | 21        |
|         |            | AMPHIPODA         |                 |           |
|         |            | HYALELLA AZTECA   | 3               | 62        |
|         |            | -----             |                 |           |
|         |            | ALL AMPHIPODA     |                 | 62        |
|         |            | ISOPODA           |                 |           |
|         |            | ASELLUS           | 14              |           |
|         |            | -----             |                 |           |
|         |            | LIRCEUS           | 2               |           |
|         |            | -----             |                 |           |
|         |            | ALL ISOPODA       |                 | 331       |
|         |            | DIPTERA           |                 |           |
|         |            | CERATOPUSONIDAE   | 11              |           |
|         |            | CHIRONOMIDAE      | 275             | 5661      |
|         |            | EMPHIDAE          | 2               |           |
|         |            | ALL DIPTERA       |                 | 5950      |
|         |            | EPHEMEROPTERA     |                 |           |
|         |            | EPHEMERIDAE       |                 |           |
|         |            | HEXAGENIA         | 16              |           |
|         |            | -----             |                 |           |
|         |            | ALL EPHEMEROPTERA |                 | 331       |
|         |            | TRICHOPTERA       |                 |           |
|         |            | MYSTACIDES        | 3               |           |
|         |            | -----             |                 |           |
|         |            | PHYLOCENTROPUS    | 9               |           |
|         |            | -----             |                 |           |
|         |            | POLYCENTROPUS     | 3               |           |
|         |            | -----             |                 |           |
|         |            | ALL TRICHOPTERA   |                 | 310       |
|         |            | ACARIJA           | 9               | 166       |
|         |            | GASTROPODA        |                 |           |
|         |            | AMNICOLA          | 35              |           |
|         |            | -----             |                 |           |
|         |            | VALVATA SINCERA   | 1               |           |
|         |            | -----             |                 |           |
|         |            | ALL GASTROPODA    |                 | 744       |
|         |            | PELECYPODA        |                 |           |
|         |            | PISIDIUM          | 90              | 1859      |
|         |            | -----             |                 |           |
|         |            | ALL PELECYPODA    |                 | 1859      |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 01

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 4/19/79 | 1.0        | CILIARIA            |                 |             |
|         |            | HYDRA               | 5               | 103         |
|         |            | -----               |                 |             |
|         |            | ALL CILIARIA        |                 | 103         |
|         |            | NEMATODA            | 2               | 41          |
|         |            | OLIGOCHAETA         | 103             | 2128        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 46              | 950         |
|         |            | -----               |                 |             |
|         |            | ALL POLYCHAETA      |                 | 950         |
|         |            | OSTRACODA           | 1               | 21          |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 2               | 41          |
|         |            | -----               |                 |             |
|         |            | ALL AMPHIPODA       |                 | 41          |
|         |            | ISOPODA             |                 |             |
|         |            | ASELLUS             | 1               | 21          |
|         |            | -----               |                 |             |
|         |            | ALL ISOPODA         |                 | 21          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 2               |             |
|         |            | CHIRONOMIDAE        | 88              | 1813        |
|         |            | ALL DIPTERA         |                 | 1859        |
|         |            | EPTHEMEROPTERA      |                 |             |
|         |            | EPTHEMERIDAE        |                 |             |
|         |            | EPTHEMERA           | 1               |             |
|         |            | -----               |                 |             |
|         |            | HEXACENTIA          | 6               |             |
|         |            | -----               |                 |             |
|         |            | ALL EPTHEMEROPTERA  |                 | 145         |
|         |            | LEPIDOPTERA         | 1               | 21          |
|         |            | ACARINA             | 7               | 145         |
|         |            | GASTROPODA          |                 |             |
|         |            | ANNICULA            | 111             |             |
|         |            | -----               |                 |             |
|         |            | CYRAULUS            | 33              |             |
|         |            | -----               |                 |             |
|         |            | LYMPIAFA            | 1               |             |
|         |            | -----               |                 |             |
|         |            | PHYSA               | 1               |             |
|         |            | -----               |                 |             |
|         |            | VALVATA SINGERA     | 35              |             |
|         |            | -----               |                 |             |
|         |            | VALVATA TRICAPITATA | 23              |             |
|         |            | -----               |                 |             |
|         |            | ALL GASTROPODA      |                 | 4215        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISICUM             | 100             | 2066        |
|         |            | -----               |                 |             |
|         |            | ALL PELECYPODA      |                 | 2066        |

## MACROBENTHOS OF THE ST. MARYS RIVER

| DATE    | DEPTH(M.) | TAXON               | STATION         |          |
|---------|-----------|---------------------|-----------------|----------|
|         |           |                     | --GRAB COUNTS-- | MEAN NO. |
| 4/19/79 | 1.0       | CNIDARIA            |                 |          |
|         |           | HYDRA               | 1               | 21       |
|         |           | -----               |                 |          |
|         |           | ALL CNIDARIA        |                 | 21       |
|         |           | OLIGOCHEETA         | 21              | 434      |
|         |           | OSTRACODA           | 1               | 21       |
|         |           | AMPHIPODA           |                 |          |
|         |           | GAMMARUS            | 1               |          |
|         |           | -----               |                 |          |
|         |           | HYALELLA            | 1               |          |
|         |           | -----               |                 |          |
|         |           | ALL AMPHIPODA       |                 | 41       |
|         |           | DIPTERA             |                 |          |
|         |           | CHIRONOMIDAE        | 26              | 537      |
|         |           | EPHIDRIDAE          | 2               |          |
|         |           | ALL DIPTERA         |                 | 578      |
|         |           | EPHEMEROPTERA       |                 |          |
|         |           | EPHEMERIDAE         |                 |          |
|         |           | EPHEMERA            | 1               |          |
|         |           | -----               |                 |          |
|         |           | ALL EPHEMEROPTERA   |                 | 21       |
|         |           | GASTROPODA          |                 |          |
|         |           | AMNIOCLA            | 17              |          |
|         |           | -----               |                 |          |
|         |           | GYRAULUS            | 2               |          |
|         |           | -----               |                 |          |
|         |           | VALVATA TRICARINATA | 3               |          |
|         |           | -----               |                 |          |
|         |           | ALL GASTROPODA      |                 | 455      |
|         |           | PELECYPODA          |                 |          |
|         |           | PISICUM             | 2               | 41       |
|         |           | -----               |                 |          |
|         |           | ALL PELECYPODA      |                 | 41       |



## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 03

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|-----------|---------------------|-----------------|-------------------------|
| 4/19/79 | 1.0       | NEMATODA            | 1               | 21                      |
|         |           | OLIGOCHAETA         | 71              | 1467                    |
|         |           | COPEPODA            | 1               | 21                      |
|         |           | AMPHIPODA           |                 |                         |
|         |           | HYALINELLA          | 2               | 41                      |
|         |           | -----               |                 |                         |
|         |           | ALL AMPHIPODA       |                 | 41                      |
|         |           | DIPTERA             |                 |                         |
|         |           | CLATOCOPIDAE        | 1               |                         |
|         |           | CHIRONOMIDAE        | 91              | 1880                    |
|         |           | ALL DIPTERA         |                 | 1901                    |
|         |           | EPHEMEROPTERA       |                 |                         |
|         |           | BAETISCIDAE         |                 |                         |
|         |           | BAETISCA            | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL EPHEMEROPTERA   |                 | 21                      |
|         |           | LEPIDOPTERA         | 1               | 21                      |
|         |           | ACARIINA            | 1               | 21                      |
|         |           | GASTROPODA          |                 |                         |
|         |           | AMNIOCOLA           | 23              |                         |
|         |           | -----               |                 |                         |
|         |           | GONIOSTOMUS LIVENS  | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA SINGERA     | 17              |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA TRICARINATA | 7               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL GASTROPODA      |                 | 992                     |
|         |           | PELECYPODA          |                 |                         |
|         |           | PISICIDAE           | 7               | 145                     |
|         |           | -----               |                 |                         |
|         |           | ALL PELECYPODA      |                 | 145                     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 04

| DATE    | DEPTH (M.) | TAXON                 | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|-----------------------|-----------------|-------------------------|
| 4/19/79 | 2.0        | CNIDARIA              |                 |                         |
|         |            | HYDRA                 | 1               | 21                      |
|         |            | -----                 |                 |                         |
|         |            | ALL CNIDARIA          |                 | 21                      |
|         |            | RHABDOCOELA           | 1               | 21                      |
|         |            | HIRUDINEA             | 1               | 21                      |
|         |            | OLIGOCHAETA           | 41              | 847                     |
|         |            | ISOPODA               |                 |                         |
|         |            | ASELLUS               | 1               | 21                      |
|         |            | -----                 |                 |                         |
|         |            | ALL ISOPODA           |                 | 21                      |
|         |            | DIPTERA               |                 |                         |
|         |            | CERATOPOGONIDAE       | 4               |                         |
|         |            | CHIRONOMIDAE          | 101             | 2087                    |
|         |            | EMPHIDAE              | 4               |                         |
|         |            | ALL DIPTERA           |                 | 2752                    |
|         |            | EPTHEMEROPTERA        |                 |                         |
|         |            | EPTHEMERIDAE          |                 |                         |
|         |            | EPHEMERA              | 1               |                         |
|         |            | -----                 |                 |                         |
|         |            | ALL EPTHEMEROPTERA    |                 | 21                      |
|         |            | GASTROPODA            |                 |                         |
|         |            | AMNIOCLA              | 149             |                         |
|         |            | -----                 |                 |                         |
|         |            | CONIOCLASIS LIVESCENS | 2               |                         |
|         |            | -----                 |                 |                         |
|         |            | GYRAULUS              | 4               |                         |
|         |            | -----                 |                 |                         |
|         |            | PHYSA                 | 1               |                         |
|         |            | -----                 |                 |                         |
|         |            | VALVATA SINCERA       | 21              |                         |
|         |            | -----                 |                 |                         |
|         |            | VALVATA TRICARINATA   | 40              |                         |
|         |            | -----                 |                 |                         |
|         |            | ALL GASTROPODA        |                 | 4463                    |
|         |            | PELECYPODA            |                 |                         |
|         |            | PISIDIUM              | 111             | 2293                    |
|         |            | -----                 |                 |                         |
|         |            | ALL PELECYPODA        |                 | 2293                    |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 06

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|-----------|---------------------|-----------------|-------------------------|
| 4/19/79 | 1.0       | CNIDARIA            |                 |                         |
|         |           | HYDRA               | 4               | 83                      |
|         |           | -----               |                 |                         |
|         |           | ALL CNIDARIA        |                 | 83                      |
|         |           | RHARDOCOELA         | 5               | 103                     |
|         |           | NEMATODA            | 5               | 103                     |
|         |           | HIRUDINEA           | 4               | 83                      |
|         |           | OLIGOCHAETA         | 161             | 3326                    |
|         |           | POLYCHAETA          |                 |                         |
|         |           | MANAYUNKIA SPECIOSA | 111             | 2293                    |
|         |           | -----               |                 |                         |
|         |           | ALL POLYCHAETA      |                 | 2293                    |
|         |           | AMPHIPODA           |                 |                         |
|         |           | HYALELLA AZTECA     | 8               | 165                     |
|         |           | -----               |                 |                         |
|         |           | ALL AMPHIPODA       |                 | 165                     |
|         |           | ISOPODA             |                 |                         |
|         |           | ASELLUS             | 2               | 41                      |
|         |           | -----               |                 |                         |
|         |           | ALL ISOPODA         |                 | 41                      |
|         |           | DIPTERA             |                 |                         |
|         |           | CERATOPOGONIDAE     | 11              |                         |
|         |           | CHIRONOMIDAE        | 196             | 4049                    |
|         |           | ALL DIPTERA         |                 | 4277                    |
|         |           | EPIHEMEROPTERA      |                 |                         |
|         |           | EPIHEMERIDAE        |                 |                         |
|         |           | EPIHEMERA           | 3               |                         |
|         |           | -----               |                 |                         |
|         |           | HEXAGENIA           | 6               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL EPIHEMEROPTERA  |                 | 186                     |
|         |           | LEPIDOPTERA         | 2               | 41                      |
|         |           | TRICHOPTERA         |                 |                         |
|         |           | MOLANNA             | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | HYSTACIDES          | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | SETOCES             | 1               |                         |
|         |           | -----               |                 |                         |
|         |           | ALL TRICHOPTERA     |                 | 62                      |
|         |           | ACARINA             | 9               | 186                     |
|         |           | GASTROPODA          |                 |                         |
|         |           | AMNICOLA            | 87              |                         |
|         |           | -----               |                 |                         |
|         |           | GYRAULUS            | 39              |                         |
|         |           | -----               |                 |                         |
|         |           | HELISOMA            | 11              |                         |
|         |           | -----               |                 |                         |
|         |           | LYMNAEA             | 6               |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA SIMPLEX     | 214             |                         |
|         |           | -----               |                 |                         |
|         |           | VALVATA TRICAPITATA | 159             |                         |
|         |           | -----               |                 |                         |
|         |           | ALL GASTROPODA      |                 | 10661                   |
|         |           | PELICYCLOA          |                 |                         |
|         |           | PISIDIUM            | 157             | 3244                    |
|         |           | -----               |                 |                         |
|         |           | ALL PELICYCLOA      |                 | 3244                    |

## MACROBENTHOS OF THE ST. MARYS RIVER

| DATE    | DEPTH(M.) | TAXON               | STATION         |           |
|---------|-----------|---------------------|-----------------|-----------|
|         |           |                     | --GRAB COUNTS-- | MEAN NO./ |
| 4/19/79 | 1.0       | CNIDARIA            |                 |           |
|         |           | HYDRA               | 3               | 62        |
|         |           | -----               |                 |           |
|         |           | ALL CNIDARIA        |                 | 62        |
|         |           | RHARDOCELA          | 2               | 41        |
|         |           | NEMATODA            | 2               | 41        |
|         |           | OLIGOCHAETA         | 36              | 744       |
|         |           | POLYCHAETA          |                 |           |
|         |           | MANAYUNKIA SPECIOSA | 32              | 661       |
|         |           | -----               |                 |           |
|         |           | ALL POLYCHAETA      |                 | 661       |
|         |           | COPEPUDA            | 1               | 21        |
|         |           | OSTRACODA           | 4               | 83        |
|         |           | AMPHIPODA           |                 |           |
|         |           | HYALELLA            | 10              | 207       |
|         |           | -----               |                 |           |
|         |           | ALL AMPHIPODA       |                 | 207       |
|         |           | ISOPODA             |                 |           |
|         |           | ASELLUS             | 1               | 21        |
|         |           | -----               |                 |           |
|         |           | ALL ISOPODA         |                 | 21        |
|         |           | DIPTERA             |                 |           |
|         |           | CERATOPOGONIDAE     | 2               |           |
|         |           | CHIRONOMIDAE        | 78              | 1611      |
|         |           | EMPHIDAE            | 2               |           |
|         |           | ALL DIPTERA         |                 | 1694      |
|         |           | LEPIDOPTERA         | 3               | 62        |
|         |           | TRICHOPTERA         |                 |           |
|         |           | HYDROPTILA          | 1               |           |
|         |           | -----               |                 |           |
|         |           | RIOLANNA            | 2               |           |
|         |           | -----               |                 |           |
|         |           | TRIAENODES          | 1               |           |
|         |           | -----               |                 |           |
|         |           | ALL TRICHOPTERA     |                 | 83        |
|         |           | ACARINA             | 6               | 124       |
|         |           | GASTROPODA          |                 |           |
|         |           | AMNICOLA            | 22              |           |
|         |           | -----               |                 |           |
|         |           | GYRAULUS            | 26              |           |
|         |           | -----               |                 |           |
|         |           | LYMNAEA             | 8               |           |
|         |           | -----               |                 |           |
|         |           | VALVATA SINCERA     | 21              |           |
|         |           | -----               |                 |           |
|         |           | VALVATA TRICARINATA | 46              |           |
|         |           | -----               |                 |           |
|         |           | ALL GASTROPODA      |                 | 2541      |
|         |           | PELECYPODA          |                 |           |
|         |           | PISICUM             | 16              | 331       |
|         |           | -----               |                 |           |
|         |           | ALL PELECYPODA      |                 | 331       |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 08

| DATE    | DEPTH(M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|---------------------|-----------------|-------------|
| 4/19/79 | 1.0       | CNIDARIA            |                 |             |
|         |           | HYDRA               | 4               | 83          |
|         |           | -----               |                 |             |
|         |           | ALL CNIDARIA        |                 | 83          |
|         |           | OLIGOCHAETA         | 24              | 496         |
|         |           | POLYCHAETA          |                 |             |
|         |           | MANAYUNKIA SPECIOSA | 5               | 103         |
|         |           | -----               |                 |             |
|         |           | ALL POLYCHAETA      |                 | 103         |
|         |           | COPEPODA            | 1               | 21          |
|         |           | OSTRACODA           | 5               | 103         |
|         |           | AMPHIPODA           |                 |             |
|         |           | HYALELLA            | 3               | 62          |
|         |           | -----               |                 |             |
|         |           | ALL AMPHIPODA       |                 | 62          |
|         |           | DIPTERA             |                 |             |
|         |           | GERATOPOGONIDAE     | 1               |             |
|         |           | CHIRONOMIDAE        | 68              | 1405        |
|         |           | HEMIPHYLLIDAE       | 3               |             |
|         |           | ALL DIPTERA         |                 | 1488        |
|         |           | TRICHOPTERA         |                 |             |
|         |           | MYSTACIDES          | 1               | 21          |
|         |           | -----               |                 |             |
|         |           | ALL TRICHOPTERA     |                 | 21          |
|         |           | ACARINA             | 1               | 21          |
|         |           | GASTROPODA          |                 |             |
|         |           | AMNICOLA            | 25              |             |
|         |           | -----               |                 |             |
|         |           | GYRAULUS            | 15              |             |
|         |           | -----               |                 |             |
|         |           | LYMAEA              | 4               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA SINCEPA     | 8               |             |
|         |           | -----               |                 |             |
|         |           | VALVATA TRICAPitata | 21              |             |
|         |           | -----               |                 |             |
|         |           | ALL GASTROPODA      |                 | 1508        |
|         |           | PELECYPODA          |                 |             |
|         |           | PISICOR             | 10              | 207         |
|         |           | -----               |                 |             |
|         |           | ALL PELECYPODA      |                 | 207         |

## MACROCENTHOS OF THE ST. MARYS RIVLR

| DATE    | DEPTH(M.) | TAXON               | STATION         |          |
|---------|-----------|---------------------|-----------------|----------|
|         |           |                     | --GRAB COUNTS-- | MEAN NO. |
| 4/19/79 | 2.0       | CNIDARIA            |                 |          |
|         |           | HYDRA               | 1               | 21       |
|         |           | -----               |                 |          |
|         |           | ALL CNIDARIA        |                 | 21       |
|         |           | HIRUDINEA           | 2               | 41       |
|         |           | OLIGOCHAETA         | 21              | 434      |
|         |           | POLYCHAETA          |                 |          |
|         |           | MANAYUNKIA SPECIOSA | 10              | 207      |
|         |           | -----               |                 |          |
|         |           | ALL POLYCHAETA      |                 | 207      |
|         |           | AMPHIPODA           |                 |          |
|         |           | HYALFELLA AZTECA    | 1               | 21       |
|         |           | -----               |                 |          |
|         |           | ALL AMPHIPODA       |                 | 21       |
|         |           | DIPTERA             |                 |          |
|         |           | CERATOPOGONIDAE     | 2               |          |
|         |           | CHIRONOMIDAE        | 33              | 662      |
|         |           | ALL DIPTERA         |                 | 723      |
|         |           | EPHEMEROPTERA       |                 |          |
|         |           | EPHEMERIDAE         |                 |          |
|         |           | HEXAGENIA           | 1               |          |
|         |           | -----               |                 |          |
|         |           | ALL EPHEMEROPTERA   |                 | 21       |
|         |           | TRICHOPTERA         |                 |          |
|         |           | HYSTACIDES          | 1               | 21       |
|         |           | -----               |                 |          |
|         |           | ALL TRICHOPTERA     |                 | 21       |
|         |           | ACARINA             | 2               | 41       |
|         |           | GASTROPODA          |                 |          |
|         |           | AMNICOLA            | 28              |          |
|         |           | -----               |                 |          |
|         |           | GYRAULUS            | 1               |          |
|         |           | -----               |                 |          |
|         |           | HELISCHIA           | 6               |          |
|         |           | -----               |                 |          |
|         |           | LYMNAEA             | 1               |          |
|         |           | -----               |                 |          |
|         |           | PHYSA               | 1               |          |
|         |           | -----               |                 |          |
|         |           | VALVATA SINCERA     | 12              |          |
|         |           | -----               |                 |          |
|         |           | VALVATA TRICARINATA | 33              |          |
|         |           | -----               |                 |          |
|         |           | ALL GASTROPODA      |                 | 1694     |
|         |           | PELECYPODA          |                 |          |
|         |           | PISICUM             | 11              | 227      |
|         |           | -----               |                 |          |
|         |           | ALL PELECYPODA      |                 | 227      |

## MACROINVERTEBRATES OF THE ST. MARYS RIVER

STATION 11

| DATE    | DEPTH (M.) | TAXON                | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|----------------------|-----------------|-------------|
| 4/16/79 | 1.0        | REABDOCOELA          | 1               | 21          |
|         |            | NEMATODA             | 32              | 661         |
|         |            | HIRUDINEA            | 3               | 62          |
|         |            | OLIGOCHAETA          | 111             | 2293        |
|         |            | POLYCHAETA           |                 |             |
|         |            | MARAYUNKIA SPECIOSA  | 41              | 847         |
|         |            | -----                |                 |             |
|         |            | ALL POLYCHAETA       |                 | 847         |
|         |            | AMPHIPODA            |                 |             |
|         |            | HYALELLA             | 10              | 207         |
|         |            | -----                |                 |             |
|         |            | ALL AMPHIPODA        |                 | 207         |
|         |            | ISOPODA              |                 |             |
|         |            | LIRCEUS              | 2               | 41          |
|         |            | -----                |                 |             |
|         |            | ALL ISOPODA          |                 | 41          |
|         |            | DIPTERA              |                 |             |
|         |            | CERATOPOGONIDAE      | 4               |             |
|         |            | CHIRONOMIDAE         | 52              | 1074        |
|         |            | EMPHIDAE             | 2               |             |
|         |            | ALL DIPTERA          |                 | 1198        |
|         |            | EPHEMEROPTERA        |                 |             |
|         |            | EPHEMEROPTERA        |                 |             |
|         |            | CAENIS               | 1               |             |
|         |            | -----                |                 |             |
|         |            | EPHEMERIDAE          |                 |             |
|         |            | EPHEMERA             | 1               |             |
|         |            | -----                |                 |             |
|         |            | HEXAGENIA            | 5               |             |
|         |            | -----                |                 |             |
|         |            | ALL EPHEMEROPTERA    |                 | 145         |
|         |            | COLEOPTERA           |                 |             |
|         |            | HALIPLIDAE           | 1               | 21          |
|         |            | -----                |                 |             |
|         |            | ALL COLEOPTERA       |                 | 21          |
|         |            | TRICHOPTERA          |                 |             |
|         |            | HYSTACIDUS           | 1               |             |
|         |            | -----                |                 |             |
|         |            | POLYCENTROPUS        | 1               |             |
|         |            | -----                |                 |             |
|         |            | TRIARCTUS            | 1               |             |
|         |            | -----                |                 |             |
|         |            | ALL TRICHOPTERA      |                 | 62          |
|         |            | GASTROPODA           |                 |             |
|         |            | AFRICOLA             | 15              |             |
|         |            | -----                |                 |             |
|         |            | GYFALUS              | 3               |             |
|         |            | -----                |                 |             |
|         |            | PHYSA                | 2               |             |
|         |            | -----                |                 |             |
|         |            | VALVATA SINCPHA      | 15              |             |
|         |            | -----                |                 |             |
|         |            | VALVATA TRICAMPICATA | 7               |             |
|         |            | -----                |                 |             |
|         |            | ALL GASTROPODA       |                 | 655         |
|         |            | PELICYPODA           |                 |             |
|         |            | PISICIDUS            | 29              | 599         |
|         |            | -----                |                 |             |
|         |            | ALL PELICYPODA       |                 | 599         |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 17

| DATE    | DEPTH(M.) | TAXON                | --GRAB COUNTS-- | MEAN NO./M |
|---------|-----------|----------------------|-----------------|------------|
| 4/18/79 | 1.0       | CNIDARIA             |                 |            |
|         |           | HYDRA                | 3               | 62         |
|         |           | -----                |                 |            |
|         |           | ALL CNIDARIA         |                 | 62         |
|         |           | RHABDOCOELA          | 2               | 41         |
|         |           | NEMATODA             | 50              | 1033       |
|         |           | HIRUDINFA            | 3               | 62         |
|         |           | GLIGOCFAETA          | 494             | 10206      |
|         |           | POLYCHAETA           |                 |            |
|         |           | MANAYUNKIA SPECIOSA  | 233             | 4814       |
|         |           | -----                |                 |            |
|         |           | ALL POLYCHAETA       |                 | 4814       |
|         |           | OSTRACODA            | 3               | 62         |
|         |           | AMPHIPODA            |                 |            |
|         |           | HYALELLA AZTECA      | 13              | 269        |
|         |           | -----                |                 |            |
|         |           | ALL AMPHIPODA        |                 | 269        |
|         |           | ISOPODA              |                 |            |
|         |           | ASPELUS              | 1               |            |
|         |           | -----                |                 |            |
|         |           | LIRCEUS              | 3               |            |
|         |           | -----                |                 |            |
|         |           | ALL ISOPODA          |                 | 83         |
|         |           | DIPTERA              |                 |            |
|         |           | CERATOPOGONIDAE      | 11              |            |
|         |           | CHIRONOMIDAE         | 112             | 2314       |
|         |           | EMPHIDIDAE           | 7               |            |
|         |           | ALL DIPTERA          |                 | 2566       |
|         |           | EPHEMEROPTERA        |                 |            |
|         |           | EPHEMERIDAE          |                 |            |
|         |           | EPHEMERA             | 4               |            |
|         |           | -----                |                 |            |
|         |           | HEXAGENIA            | 8               |            |
|         |           | -----                |                 |            |
|         |           | ALL EPHEMEROPTERA    |                 | 248        |
|         |           | LEPIDOPTERA          | 1               | 21         |
|         |           | TRICHOPTERA          |                 |            |
|         |           | MYSTACIDES           | 3               | 62         |
|         |           | -----                |                 |            |
|         |           | ALL TRICHOPTERA      |                 | 62         |
|         |           | ACARINA              | 2               | 41         |
|         |           | GASTROPODA           |                 |            |
|         |           | AMNICOLA             | 32              |            |
|         |           | -----                |                 |            |
|         |           | GYRAULUS             | 10              |            |
|         |           | -----                |                 |            |
|         |           | HELISOMA             | 4               |            |
|         |           | -----                |                 |            |
|         |           | LYGATA               | 1               |            |
|         |           | -----                |                 |            |
|         |           | VALVATA SINCEPA      | 52              |            |
|         |           | -----                |                 |            |
|         |           | VALVATA TROCHILINATA | 63              |            |
|         |           | -----                |                 |            |
|         |           | ALL GASTROPODA       |                 | 3347       |
|         |           | PELLOCYPERA          |                 |            |
|         |           | PISIDIUM             | 104             | 2149       |
|         |           | -----                |                 |            |
|         |           | ALL PELLOCYPERA      |                 | 2149       |



## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 13

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 4/18/79 | 1.0        | RHABDOCOELA         | 1               | 21          |
|         |            | NEMATODA            | 1               | 21          |
|         |            | HIRUDINIA           | 3               | 62          |
|         |            | OLIGOCHAETA         | 73              | 1508        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 11              | 227         |
|         |            | ALL POLYCHAETA      |                 | 227         |
|         |            | AMPHIPODA           |                 |             |
|         |            | GAMMARUS            | 1               |             |
|         |            | HYALELLA            | 15              |             |
|         |            | ALL AMPHIPODA       |                 | 331         |
|         |            | DIPTERA             |                 |             |
|         |            | CHIRONOMIDAE        | 82              | 1694        |
|         |            | EMBIIDIDAE          | 4               |             |
|         |            | ALL DIPTERA         |                 | 1777        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | HEXAGENIA           | 1               |             |
|         |            | ALL EPHEMEROPTERA   |                 | 21          |
|         |            | TRICHOPTERA         |                 |             |
|         |            | MOLANNA             | 1               |             |
|         |            | MYSTACIDES          | 2               |             |
|         |            | ALL TRICHOPTERA     |                 | 62          |
|         |            | ACARINA             | 5               | 103         |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNICOLA            | 102             |             |
|         |            | GYRALLUS            | 1               |             |
|         |            | HELISOMA            | 1               |             |
|         |            | LYNNAEA             | 5               |             |
|         |            | PHYSA               | 1               |             |
|         |            | VALVATA SICCRA      | 75              |             |
|         |            | VALVATA TRICAPINATA | 173             |             |
|         |            | ALL GASTROPODA      |                 | 7396        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 87              | 1797        |
|         |            | ALL PELECYPODA      |                 | 1797        |

| DATE    | EXPERIMENT | TAXA                | 89 | --GRAB COUNTS-- | MEMO NO./M2 |
|---------|------------|---------------------|----|-----------------|-------------|
| 4/20/79 | 240        | CHILASIA<br>HYERA   |    | 15              | 310         |
|         |            | ALL CHILASIA        |    |                 | 310         |
|         |            | RHABDOCHILA         |    | 15              | 310         |
|         |            | TRICLACIA           |    | 4               | 83          |
|         |            | NEMERTINEA          |    | 1               | 21          |
|         |            | NEMATODA            |    | 58              | 1196        |
|         |            | HERUDILEA           |    | 9               | 106         |
|         |            | OLIGOCHAETA         |    | 532             | 10991       |
|         |            | POLYCHAETA          |    |                 |             |
|         |            | MANAYUNKIA SPECIOSA |    | 13              | 269         |
|         |            | ALL POLYCHAETA      |    |                 | 269         |
|         |            | OSTRACODA           |    | 14              | 289         |
|         |            | AMPHIRODA           |    |                 |             |
|         |            | SAMMARUS            |    | 1               |             |
|         |            | MYALELLA AZTECA     |    | 51              |             |
|         |            | ALL AMPHIPODA       |    |                 | 1074        |
|         |            | ISOPODA             |    |                 |             |
|         |            | ASELLUS             |    | 4               |             |
|         |            | LIRCEUS             |    | 13              |             |
|         |            | ALL ISOPODA         |    |                 | 351         |
|         |            | DIPTERA             |    |                 |             |
|         |            | CERATOPOGONIDAE     |    | 27              |             |
|         |            | CHIRONOMIDAE        |    | 350             | 7231        |
|         |            | EMPHIDAE            |    | 4               |             |
|         |            | ALL DIPTERA         |    |                 | 7871        |
|         |            | EPHEMEROPTERA       |    |                 |             |
|         |            | EPHEMEROPTERA       |    |                 |             |
|         |            | CAENIS              |    | 1               |             |
|         |            | EPHEMERIDAE         |    |                 |             |
|         |            | EPHEMERA            |    | 2               |             |
|         |            | HEXAGENIA           |    | 16              |             |
|         |            | ALL EPHEMEROPTERA   |    |                 | 393         |
|         |            | COLEOPTERA          |    |                 |             |
|         |            | BYTISCIDAE          |    | 1               | 21          |
|         |            | ALL COLEOPTERA      |    |                 | 21          |
|         |            | LEPIDOPTERA         |    | 7               | 145         |
|         |            | TRICHOPTERA         |    |                 |             |
|         |            | MYSTACIDUS          |    | 7               |             |
|         |            | DIACETIS            |    | 1               |             |
|         |            | PHYLOCENTRUS        |    | 1               |             |
|         |            | POLYCENTRUS         |    | 6               |             |
|         |            | ALL TRICHOPTERA     |    |                 | 310         |
|         |            | ECARIDAE            |    | 22              | 455         |
|         |            | GASTROPODA          |    |                 |             |
|         |            | AMPHIOCHA           |    | 4               |             |
|         |            | CAPIPELUS           |    | 1               |             |
|         |            | GYPHILUS            |    | 36              |             |
|         |            | HELIX               |    | 4               |             |
|         |            | LYMNAEA             |    | 3               |             |
|         |            | PHYLA               |    | 6               |             |
|         |            | VALVATA             |    | 1               |             |
|         |            | VALVATA             |    | 10              |             |
|         |            | ALL GASTROPODA      |    |                 | 603         |
|         |            | CHIRONOMIDAE        |    | 136             | 2410        |
|         |            | ALL CHIRONOMIDAE    |    |                 | 2410        |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 15

| DATE    | DEPTH(M.) | TAXON           | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|-----------|-----------------|-----------------|-------------|
| 4/20/79 | 3.0       | CNIDARIA        |                 |             |
|         |           | HYDRA           | 2               | 41          |
|         |           | -----           |                 |             |
|         |           | ALL CNIDARIA    |                 | 41          |
|         |           | RHARDOCOELA     | 6               | 124         |
|         |           | NEMERTINEA      | 1               | 21          |
|         |           | NEMATODA        | 58              | 1198        |
|         |           | OLIGOCHAETA     | 178             | 3677        |
|         |           | POLYCHAETA      | 2               | 41          |
|         |           | OSTRACODA       | 8               | 165         |
|         |           | AMPHIPODA       |                 |             |
|         |           | HYALELLA AZTECA | 2               | 41          |
|         |           | -----           |                 |             |
|         |           | ALL AMPHIPODA   |                 | 41          |
|         |           | DIPTERA         |                 |             |
|         |           | CHIRONOMIDAE    | 294             | 6074        |
|         |           | EMBIIDAE        | 3               |             |
|         |           | ALL DIPTERA     |                 | 6136        |
|         |           | TRICHOPTERA     |                 |             |
|         |           | CHEMATOPSYCHE   | 1               |             |
|         |           | -----           |                 |             |
|         |           | PHYLOCLINTOPUS  | 1               |             |
|         |           | -----           |                 |             |
|         |           | ALL TRICHOPTERA |                 | 41          |
|         |           | ACAPINA         | 2               | 41          |
|         |           | GASTROPODA      |                 |             |
|         |           | CAMPULOMA       | 1               |             |
|         |           | -----           |                 |             |
|         |           | VALVATA SINGENA | 1               |             |
|         |           | -----           |                 |             |
|         |           | ALL GASTROPODA  |                 | 41          |
|         |           | PELECYPODA      |                 |             |
|         |           | PISICUM         | 56              | 1157        |
|         |           | -----           |                 |             |
|         |           | ALL PELECYPODA  |                 | 1157        |

## MACROBENTHOS OF THE ST. PARYS RIVER

| DATE    | DEPTH (M.) | TAXON               | STATION         |         |
|---------|------------|---------------------|-----------------|---------|
|         |            |                     | --GRAB COUNTS-- | MEAN NO |
| 4/18/79 | 1.0        | RHABDOCOELA         | 17              | 351     |
|         |            | NEMERTINEA          | 1               | 21      |
|         |            | NEMATODA            | 57              | 1178    |
|         |            | HIRUDINFA           | 21              | 434     |
|         |            | OLIGOCHAETA         | 941             | 19441   |
|         |            | POLYCHAETA          |                 |         |
|         |            | MANAYUNKIA SPECIOSA | 35              | 723     |
|         |            | ALL POLYCHAETA      |                 | 723     |
|         |            | OSTRACODA           | 3               | 62      |
|         |            | AMPHIPODA           |                 |         |
|         |            | GAMMARUS            | 1               |         |
|         |            | HYALELLA AZTECA     | 203             |         |
|         |            | ALL AMPHIPODA       |                 | 4215    |
|         |            | ISOPODA             |                 |         |
|         |            | ASELLUS             | 16              |         |
|         |            | LIRCEUS             | 12              |         |
|         |            | ALL ISOPODA         |                 | 578     |
|         |            | DIPTERA             |                 |         |
|         |            | CERATOPOGONIDAE     | 37              |         |
|         |            | CHIRONOMIDAE        | 564             | 11652   |
|         |            | EMPHIDIDAE          | 3               |         |
|         |            | ALL DIPTERA         |                 | 12479   |
|         |            | EPHEMEROPTERA       |                 |         |
|         |            | EPHEMERIDAE         |                 |         |
|         |            | EPHEMERA            | 1               |         |
|         |            | HEXAGENIA           | 8               |         |
|         |            | ALL EPHEMEROPTERA   |                 | 186     |
|         |            | LEPIDOPTERA         | 15              | 310     |
|         |            | TRICHOPTERA         |                 |         |
|         |            | MYSTACIDES          | 23              |         |
|         |            | PHYLLICENTROPUS     | 4               |         |
|         |            | POLYCENTROPUS       | 12              |         |
|         |            | TRIAENODES          | 1               |         |
|         |            | ALL TRICHOPTERA     |                 | 626     |
|         |            | HEMIPTERA           |                 |         |
|         |            | CURIXITAE           | 4               | 83      |
|         |            | ACARI               | 16              | 331     |
|         |            | GASTROPODA          |                 |         |
|         |            | AMNICOLA            | 14              |         |
|         |            | GYRAULUS            | 17              |         |
|         |            | PHYSA               | 2               |         |
|         |            | VALVATA SINCPA      | 22              |         |
|         |            | VALVATA DEICAPINATA | 1               |         |
|         |            | ALL GASTROPODA      |                 | 1157    |
|         |            | PELICYPODA          |                 |         |
|         |            | PISIDIUM            | 24              | 599     |
|         |            | ALL PELICYPODA      |                 | 599     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 17

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M2 |
|---------|------------|---------------------|-----------------|-------------|
| 4/18/79 | 1.0        | RAHBUCCOLA          | 4               | 83          |
|         |            | NEMATODA            | 18              | 372         |
|         |            | HIRUDINEA           | 3               | 62          |
|         |            | OLIGOCHAETA         | 177             | 3657        |
|         |            | POLYCHAETA          |                 |             |
|         |            | MANAYUNKIA SPECIOSA | 81              | 1673        |
|         |            | ALL POLYCHAETA      |                 | 1673        |
|         |            | OSTRACODA           | 6               | 124         |
|         |            | AMPHIPODA           |                 |             |
|         |            | HYALELLA            | 27              | 558         |
|         |            | ALL AMPHIPODA       |                 | 558         |
|         |            | ISPODA              |                 |             |
|         |            | LIRCEUS             | 3               | 62          |
|         |            | ALL ISPODA          |                 | 62          |
|         |            | DIPTERA             |                 |             |
|         |            | CERATOPOGONIDAE     | 10              |             |
|         |            | CHIRONOMIDAE        | 85              | 1756        |
|         |            | ALL DIPTERA         |                 | 1963        |
|         |            | EPHEMEROPTERA       |                 |             |
|         |            | EPHEMERIDAE         |                 |             |
|         |            | EPHEMERA            | 5               |             |
|         |            | HEXAGENIA           | 17              |             |
|         |            | ALL EPHEMEROPTERA   |                 | 455         |
|         |            | TRICHOPTERA         |                 |             |
|         |            | PSYLLOPS            | 1               |             |
|         |            | HYSTACIDUS          | 1               |             |
|         |            | DECEITIS            | 1               |             |
|         |            | POLYCENTRUPUS       | 1               |             |
|         |            | TRIAENODES          | 1               |             |
|         |            | ALL TRICHOPTERA     |                 | 103         |
|         |            | HEMIPTERA           |                 |             |
|         |            | CORIXIDAE           | 1               | 21          |
|         |            | ACARTIA             | 4               | 83          |
|         |            | GASTROPODA          |                 |             |
|         |            | AMNIOCOLA           | 46              |             |
|         |            | CYRILLUS            | 3               |             |
|         |            | HELISOMA            | 1               |             |
|         |            | LYANAFA             | 1               |             |
|         |            | VALVATA SINGERA     | 6               |             |
|         |            | VALVATA TRICAPITATA | 2               |             |
|         |            | ALL GASTROPODA      |                 | 1219        |
|         |            | PELECYPODA          |                 |             |
|         |            | PISIDIUM            | 92              | 1901        |
|         |            | ALL PELECYPODA      |                 | 1901        |

## MACROBENTHOS OF THE ST. MARYS RIVER

| DATE    | DEPTH (M.) | TAXON               | STATION         |          |
|---------|------------|---------------------|-----------------|----------|
|         |            |                     | --GRAB COUNTS-- | MEAN NO. |
| 4/16/79 | 1.0        | RHABDOCOELA         | 1               | 21       |
|         |            | NEMATODA            | 13              | 269      |
|         |            | HIRUDINEA           | 4               | 83       |
|         |            | OLIGOCHAETA         | 212             | 4380     |
|         |            | POLYCHAETA          |                 |          |
|         |            | MANAYUNKIA SPECIOSA | 109             | 2252     |
|         |            | -----               |                 |          |
|         |            | ALL POLYCHAETA      |                 | 2252     |
|         |            | OSTRACODA           | 9               | 186      |
|         |            | AMPHIPODA           |                 |          |
|         |            | HYALELLA AZTECA     | 25              | 516      |
|         |            | -----               |                 |          |
|         |            | ALL AMPHIPODA       |                 | 516      |
|         |            | DIPTERA             |                 |          |
|         |            | CEPATOPOGONIDAE     | 6               |          |
|         |            | CHIRONOMIDAE        | 118             | 2438     |
|         |            | ALL DIPTERA         |                 | 2562     |
|         |            | EPHEMEROPTERA       |                 |          |
|         |            | EPHEMERIDAE         |                 |          |
|         |            | EPHEMERA            | 2               |          |
|         |            | -----               |                 |          |
|         |            | HEXAGENIA           | 7               |          |
|         |            | -----               |                 |          |
|         |            | ALL EPHEMEROPTERA   |                 | 186      |
|         |            | TRICHOPTERA         |                 |          |
|         |            | MOLANIDAE           | 2               |          |
|         |            | -----               |                 |          |
|         |            | HYSTACIIDES         | 10              |          |
|         |            | -----               |                 |          |
|         |            | OECETIS             | 1               |          |
|         |            | -----               |                 |          |
|         |            | ALL TRICHOPTERA     |                 | 269      |
|         |            | ACARINA             | 5               | 103      |
|         |            | GASTROPODA          |                 |          |
|         |            | AMNICOLA            | 98              |          |
|         |            | -----               |                 |          |
|         |            | HELISOMA            | 1               |          |
|         |            | -----               |                 |          |
|         |            | VALVATA SINCERA     | 14              |          |
|         |            | -----               |                 |          |
|         |            | VALVATA TRICARINATA | 4               |          |
|         |            | -----               |                 |          |
|         |            | ALL GASTROPODA      |                 | 2417     |
|         |            | PELECYPODA          |                 |          |
|         |            | PISICUM             | 122             | 2521     |
|         |            | -----               |                 |          |
|         |            | ALL PELECYPODA      |                 | 2521     |

## MACROINVENTHUS OF THE ST. MARYS RIVER

STATION 19

| DATE    | DEPTH (M.) | TAXON               | --GRAB COUNTS-- | MEAN NO./M <sup>2</sup> |
|---------|------------|---------------------|-----------------|-------------------------|
| 4/18/79 | 2.0        | RHABDOCELA          | 2               | 41                      |
|         |            | NEMATODA            | 10              | 207                     |
|         |            | HIRUDINEA           | 4               | 83                      |
|         |            | OLIGOCHAETA         | 163             | 3366                    |
|         |            | POLYCHAETA          |                 |                         |
|         |            | MANAYUNKIA SPECIOSA | 25              | 516                     |
|         |            | ALL POLYCHAETA      |                 | 516                     |
|         |            | COPEPODA            | 1               | 21                      |
|         |            | OSTRACODA           | 1               | 21                      |
|         |            | AMPHIPODA           |                 |                         |
|         |            | GAMMARUS            | 3               |                         |
|         |            | HYALELLA AZTECA     | 24              |                         |
|         |            | ALL AMPHIPODA       |                 | 558                     |
|         |            | ISOPODA             |                 |                         |
|         |            | LIRCEUS             | 2               | 41                      |
|         |            | ALL ISOPODA         |                 | 41                      |
|         |            | DIPTERA             |                 |                         |
|         |            | CERATOPOGONIDAE     | 9               |                         |
|         |            | CHIRONOMIDAE        | 135             | 2789                    |
|         |            | EMPHIDIDAE          | 1               |                         |
|         |            | ALL DIPTERA         |                 | 2996                    |
|         |            | EPHEMEROPTERA       |                 |                         |
|         |            | EPHEMERIDAE         |                 |                         |
|         |            | EPHEMERA            | 1               |                         |
|         |            | HEXAGENIA           | 6               |                         |
|         |            | ALL EPHEMEROPTERA   |                 | 145                     |
|         |            | TRICHOPTERA         |                 |                         |
|         |            | HECTETIS            | 1               |                         |
|         |            | POLYCENTROPUS       | 3               |                         |
|         |            | ALL TRICHOPTERA     |                 | 83                      |
|         |            | HEMIPTERA           |                 |                         |
|         |            | CORIXIDAE           | 1               | 21                      |
|         |            | ACARINA             | 5               | 103                     |
|         |            | GASTROPODA          |                 |                         |
|         |            | AMNICOLA            | 59              |                         |
|         |            | GYRAULUS            | 2               |                         |
|         |            | HELISSA             | 3               |                         |
|         |            | LYMNAEA             | 1               |                         |
|         |            | VALVATA SUCERA      | 15              |                         |
|         |            | VALVATA TRICARINATA | 11              |                         |
|         |            | ALL GASTROPODA      |                 | 1090                    |
|         |            | PELECYPODA          |                 |                         |
|         |            | PISIDIUM            | 41              | 847                     |
|         |            | ALL PELECYPODA      |                 | 847                     |

## MACROBENTHOS OF THE ST. MARYS RIVER

STATION 20

| DATE                 | DEPTH (M.) | TAXON                 | --GRAB COUNTS-- | MEAN NO./M2 |
|----------------------|------------|-----------------------|-----------------|-------------|
| 4/18/79              | 3.0        | RHABDOCUELA           | 7               | 145         |
|                      |            | TRICLADIDA            | 5               | 103         |
|                      |            | NEMATODA              | 5               | 103         |
|                      |            | OLIGOCHAETA           | 96              | 1983        |
|                      |            | POLYCHAETA            |                 |             |
|                      |            | MANAYUNKIA SPECIOSA   | 3               | 62          |
|                      |            | ALL POLYCHAETA        |                 | 62          |
|                      |            | OSTRACODA             | 21              | 434         |
|                      |            | AMPHIPODA             |                 |             |
|                      |            | HYALINELLA AZTECA     | 17              | 351         |
|                      |            | ALL AMPHIPODA         |                 | 351         |
|                      |            | ISOPODA               |                 |             |
|                      |            | LIRCEUS               | 3               | 62          |
|                      |            | ALL ISOPODA           |                 | 62          |
|                      |            | DIPTERA               |                 |             |
|                      |            | CERATOPUGONIDAE       | 9               |             |
|                      |            | CHIRONOMIDAE          | 135             | 2789        |
|                      |            | EMPHIDIDAE            | 1               |             |
|                      |            | ALL DIPTERA           |                 | 2996        |
|                      |            | EPHEMEROPTERA         |                 |             |
|                      |            | EPHEMERIDAE           |                 |             |
|                      |            | EPHEMERA              | 2               |             |
|                      |            | HEXAGENIA             | 10              |             |
|                      |            | ALL EPHEMEROPTERA     |                 | 248         |
|                      |            | COLEOPTERA            |                 |             |
|                      |            | HALIPLIDAE            | 1               | 21          |
|                      |            | ALL COLEOPTERA        |                 | 21          |
|                      |            | TRICHOPTERA           |                 |             |
|                      |            | HYSTACIDES            | 11              |             |
|                      |            | OECETIS               | 1               |             |
|                      |            | POLYCENTROPUS         | 2               |             |
|                      |            | ALL TRICHOPTERA       |                 | 269         |
|                      |            | HEMIPTERA             |                 |             |
|                      |            | CORIXIDAE             | 2               | 41          |
|                      |            | ACARINA               | 13              | 269         |
|                      |            | GASTROPODA            |                 |             |
|                      |            | AMNICOLA              | 45              |             |
|                      |            | GYRALLUS              | 7               |             |
|                      |            | MELISMA               | 3               |             |
|                      |            | PHYSA                 | 1               |             |
|                      |            | VALVATA SINCPRA       | 18              |             |
|                      |            | VALVATA TRICARINATA   | 6               |             |
|                      |            | ALL GASTROPODA        |                 | 1653        |
|                      |            | PELECYPODA            |                 |             |
|                      |            | PISIDIUM              | 157             | 3244        |
|                      |            | ALL PELECYPODA        |                 | 3244        |
| EXECUTION TERMINATED |            | 00 04 32 T=4.954 PC=0 | 51.60           |             |



Appendix 2. Drift net catches at Frechette Point and Six Mile Point  
in the St. Marys River, February 15-April 21, 1979.

Catches in drift nets fished at the Frechette Point high impact site, February 1979. [Macroinvertebrate and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station<br>number             | Component<br>of catch   | Dates and hours nets fished |               |               |               |               |
|-------------------------------|-------------------------|-----------------------------|---------------|---------------|---------------|---------------|
|                               |                         | 2/15                        | 2/15-16       | 2/16          |               |               |
|                               |                         | 0900-<br>1700               | 1700-<br>1030 | 1030-<br>1230 | 1230-<br>1400 | 1400-<br>1600 |
| <u>Macroinvertebrates</u>     |                         |                             |               |               |               |               |
| 7a                            | <u>Mysis relicta</u>    | 0                           | 13            | 0             | 0             | 0             |
|                               | <u>Gyraulius</u>        | 0                           | 0             | 2             | 0             | 0             |
|                               | <u>Caenis</u>           | 0                           | 0             | 0             | 1             | 0             |
|                               | <u>Paraleptophlebia</u> | 0                           | 0             | 0             | 0             | 1             |
|                               | <u>Chironomidae</u>     | 0                           | 0             | 0             | 1             | 0             |
| 7b                            | <u>Mysis relicta</u>    | 0                           | 1             | 0             | 0             | 0             |
|                               | <u>Gammarus</u>         | 0                           | 1             | 0             | 0             | 0             |
|                               | <u>Gyraulius</u>        | 0                           | 0             | 0             | 0             | 1             |
|                               | <u>Valvata sincera</u>  | 0                           | 0             | 10            | 0             | 0             |
|                               | <u>Hydra</u>            | 0                           | 0             | 0             | 28            | 27            |
|                               | <u>Hexagenia</u>        | 0                           | 2             | 0             | 0             | 0             |
|                               | <u>Mystacides</u>       | 0                           | 0             | 0             | 2             | 0             |
|                               | <u>Chironomidae</u>     | 0                           | 0             | 6             | 5             | 1             |
| 7c                            | <u>Chironomidae</u>     | 0                           | 0             | 0             | 1             | 0             |
|                               | <u>Oligochaeta</u>      | 0                           | 0             | 1             | 0             | 0             |
|                               | <u>Hydra</u>            | 0                           | 0             | 12            | 38            | 27            |
| 7d                            | <u>Hydra</u>            | 0                           | 0             | 51            | 5             | 4             |
|                               | <u>Mystacides</u>       | 0                           | 0             | 0             | 2             | 0             |
|                               | <u>Chironomidae</u>     | 0                           | 0             | 5             | 1             | 6             |
| Total macroinvertebrate catch |                         | 0                           | 17            | 87            | 84            | 67            |
| <u>Macrophytes</u>            |                         |                             |               |               |               |               |
| 7a                            |                         | 0                           | 0             | 39.0          | 114.2         | 124.6         |
| 7b                            |                         | 0                           | 0             | 19.6          | 45.8          | 133.4         |
| 7c                            |                         | 0                           | 0             | 0             | 0             | 1.4           |
| 7d                            |                         | 0                           | 0             | 0             | 0             | 78.4          |
| Total macrophyte catch        |                         | 0                           | 0             | 58.6          | 160.0         | 337.8         |

(table continued)

| Station<br>number    | Component<br>of catch | Dates and hours nets fished |               |               |               |               |
|----------------------|-----------------------|-----------------------------|---------------|---------------|---------------|---------------|
|                      |                       | 2/15                        | 2/15-16       | 2/16          |               |               |
|                      |                       | 0900-<br>1700               | 1700-<br>1030 | 1030-<br>1230 | 1230-<br>1400 | 1400-<br>1600 |
|                      | <u>Detritus</u>       |                             |               |               |               |               |
| 7a                   |                       | 0.099                       | 0.456         | 0.044         | 1.103         | 0.109         |
| 7b                   |                       | 0.175                       | 0.368         | 0.384         | 5.497         | 0.971         |
| 7c                   |                       | 0.194                       | 0.506         | 0.952         | 11.058        | 0.468         |
| 7d                   |                       | 0.093                       | 1.226         | 0.522         | 14.643        | 0.719         |
| Total detritus catch |                       | 0.561                       | 2.556         | 1.902         | 32.301        | 2.267         |
|                      | <u>Fish</u>           |                             |               |               |               |               |
| 7d                   | <u>Cottus</u> spp.    | 0                           | 1             | 0             | 0             | 0             |

Catches in drift nets fished at the Frechette Point high impact site, March 1979. [Macroinvertebrate and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station number                | Component of catch | Dates and hours nets fished |           |           |
|-------------------------------|--------------------|-----------------------------|-----------|-----------|
|                               |                    | 3/13-14                     | 3/14      | 3/17-18   |
|                               |                    | 1515-1030                   | 1030-1730 | 1445-0900 |
| <u>Macroinvertebrates</u>     |                    |                             |           |           |
| 7                             | Hirudinea          | 0                           | 1         | 0         |
|                               | <u>Ephemera</u>    | 0                           | 1         | 0         |
|                               | <u>Agrypnia</u>    | 1                           | 0         | 0         |
| 9                             | <u>Chaoborus</u>   | 0                           | 1         | 0         |
| 10                            |                    | 0                           | 0         | 0         |
| Total macroinvertebrate catch |                    | 1                           | 3         | 0         |
| <u>Macrophytes</u>            |                    |                             |           |           |
| 7                             |                    | 22.20                       | 252.92    | 0         |
| 9                             |                    | 6.40                        | 0         | 104.48    |
| 10                            |                    | 96.56                       | 18.82     | 21.00     |
| Total macrophyte catch        |                    | 125.16                      | 271.74    | 125.48    |
| <u>Detritus</u>               |                    |                             |           |           |
| 7                             |                    | 1.227                       | 4.657     | 2.441     |
| 9                             |                    | 0.877                       | 8.839     | 1.407     |
| 10                            |                    | 1.092                       | 2.706     | 2.489     |
| Total detritus weight         |                    | 3.196                       | 16.202    | 6.337     |

Catches in drift nets fished at Frechette Point low impact site, March 1979. [Macroinvertebrate and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station<br>number             | Component<br>of catch | Dates and hours nets fished |               |               |
|-------------------------------|-----------------------|-----------------------------|---------------|---------------|
|                               |                       | 3/13-14                     | 3/14          | 3/17-18       |
|                               |                       | 1500-<br>0930               | 0930-<br>1745 | 1500-<br>1000 |
| <u>Macroinvertebrates</u>     |                       |                             |               |               |
| 2                             |                       | 0                           | 0             | 0             |
| 4                             | <u>Amnicola</u>       | 0                           | 0             | 3             |
|                               | <u>Physa</u>          | 0                           | 0             | 1             |
|                               | <u>Lirceus</u>        | 1                           | 1             | 0             |
|                               | <u>Hydracarina</u>    | 1                           | 0             | 0             |
|                               | <u>Simulidae</u>      | 4                           | 0             | 0             |
|                               | <u>Chironomidae</u>   | 2                           | 0             | 0             |
| 5                             | <u>Gammarus</u>       | 1                           | 0             | 0             |
|                               | <u>Hexagenia</u>      | 1                           | 0             | 0             |
|                               | <u>Baetidae</u>       | 1                           | 0             | 0             |
|                               | <u>Simulidae</u>      | 3                           | 0             | 0             |
| Total macroinvertebrate catch |                       | 14                          | 1             | 4             |
| <u>Macrophytes</u>            |                       |                             |               |               |
| 2                             |                       | 0                           | 0             | 0             |
| 4                             |                       | 0                           | 16.80         | 53.26         |
| 5                             |                       | 0                           | 2.42          | 0             |
| Total macrophyte catch        |                       | 0                           | 19.22         | 53.26         |
| <u>Detritus</u>               |                       |                             |               |               |
| 2                             |                       | 0.112                       | 3.666         | 0.478         |
| 4                             |                       | 0.402                       | 0.175         | 0.544         |
| 5                             |                       | 0.763                       | 0.934         | 0.471         |
| Total detritus weight         |                       | 1.277                       | 4.775         | 1.493         |
| <u>Fish</u>                   |                       |                             |               |               |
| 4                             | <u>Cottus</u> spp.    | 0                           | 0             | 1             |

Catches in drift nets fished at the Frechette Point high impact site, April 1979. [Macroinvertebrates and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

|                               |                       | Dates and hours nets fished |       |       |
|-------------------------------|-----------------------|-----------------------------|-------|-------|
| Station<br>number             | Component<br>of catch | 4/20-21                     | 4/21  |       |
|                               |                       | 1600-                       | 1330- | 1530- |
|                               |                       | 1330                        | 1530  | 1730  |
| <u>Macroinvertebrates</u>     |                       |                             |       |       |
| 7                             |                       | 0                           | 0     | 0     |
| 9                             | <u>Hexagenia</u>      | 0                           | 1     | 0     |
| 10                            |                       | 0                           | 0     | 0     |
|                               |                       | <hr/>                       | <hr/> | <hr/> |
| Total macroinvertebrate catch |                       | 0                           | 1     | 0     |
| <hr/>                         |                       |                             |       |       |
| <u>Macrophytes</u>            |                       |                             |       |       |
| 7                             |                       | 0                           | 0     | 0     |
| 9                             |                       | 0                           | 9.88  | 0     |
| 10                            |                       | 0                           | 0     | 0     |
|                               |                       | <hr/>                       | <hr/> | <hr/> |
| Total macrophyte catch        |                       | 0                           | 9.88  | 0     |
| <hr/>                         |                       |                             |       |       |
| <u>Detritus</u>               |                       |                             |       |       |
| 7                             |                       | 0                           | 0     | 0     |
| 9                             |                       | 14.083                      | 3.506 | 2.029 |
| 10                            |                       | 0                           | 0     | 0     |
|                               |                       | <hr/>                       | <hr/> | <hr/> |
| Total detritus weight         |                       | 14.083                      | 3.506 | 2.029 |
| <hr/>                         |                       |                             |       |       |

Catches in drift nets fished at the Frechette Point low impact site, April 1979. [Macroinvertebrates and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station<br>number             | Component<br>of catch | Dates and hours nets fished |               |               |               |               |
|-------------------------------|-----------------------|-----------------------------|---------------|---------------|---------------|---------------|
|                               |                       | 4/20-21                     | 4/21          |               |               |               |
|                               |                       | 1500-<br>0930               | 0930-<br>1100 | 1100-<br>1300 | 1300-<br>1500 | 1500-<br>1700 |
| <u>Macroinvertebrates</u>     |                       |                             |               |               |               |               |
| 2                             | <u>Mysis relicta</u>  | 1                           | 0             | 1             | 0             | 0             |
|                               | <u>Baetisca</u>       | 0                           | 0             | 1             | 0             | 0             |
|                               | <u>Chironomidae</u>   | 0                           | 0             | 1             | 0             | 0             |
| 4                             | <u>Hexagenia</u>      | 0                           | 3             | 1             | 0             | 0             |
|                               | <u>Ephemera</u>       | 0                           | 3             | 0             | 0             | 0             |
|                               | <u>Chironomidae</u>   | 0                           | 0             | 1             | 0             | 0             |
| 5                             | <u>Campeloma</u>      | 0                           | 1             | 0             | 0             | 0             |
|                               | <u>Hexagenia</u>      | 0                           | 3             | 0             | 0             | 0             |
| Total macroinvertebrate catch |                       | 1                           | 10            | 5             | 0             | 0             |
| <u>Macrophytes</u>            |                       |                             |               |               |               |               |
| 2                             |                       | 0                           | 0             | 0             | 10.84         | 14.14         |
| 4                             |                       | 0                           | 0             | 2.90          | 0             | 0             |
| 5                             |                       | 0                           | 0             | 0             | 0             | 0             |
| Total macrophyte catch        |                       | 0                           | 0             | 2.90          | 10.84         | 14.14         |
| <u>Detritus</u>               |                       |                             |               |               |               |               |
| 2                             |                       | 3.810                       | 0.846         | 0.204         | 0.549         | 0.562         |
| 4                             |                       | 1.772                       | 15.209        | 0.511         | 0.122         | 0.295         |
| 5                             |                       | 0.770                       | 1.464         | 0.289         | 0.701         | 1.312         |
| Total detritus weight         |                       | 6.359                       | 17.519        | 1.004         | 1.372         | 2.169         |

Catches in drift nets fished at the Six Mile Point high impact site, March 1979. [Macroinvertebrate and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station<br>number             | Component<br>of catch | Dates and hours nets fished |               |               |
|-------------------------------|-----------------------|-----------------------------|---------------|---------------|
|                               |                       | 3/13-14                     | 3/14          | 3/17-18       |
|                               |                       | 1545-<br>1045               | 1045-<br>1715 | 1415-<br>0930 |
| <u>Macroinvertebrates</u>     |                       |                             |               |               |
| 12                            | <u>Physa</u>          | 1                           | 0             | 0             |
| 14                            |                       | 0                           | 0             | 0             |
| 15                            |                       | 0                           | 0             | 0             |
| Total macroinvertebrate catch |                       | 1                           | 0             | 0             |
| <u>Macrophytes</u>            |                       |                             |               |               |
| 12                            |                       | 107.28                      | 90.48         | 144.22        |
| 14                            |                       | 17.12                       | 34.62         | 0             |
| 15                            |                       | 52.76                       | 5.86          | 12.36         |
| Total macrophyte catch        |                       | 177.16                      | 130.96        | 156.58        |
| <u>Detritus</u>               |                       |                             |               |               |
| 12                            |                       | 0.045                       | 0.095         | 0.013         |
| 14                            |                       | 0.238                       | 0.242         | 0.307         |
| 15                            |                       | 0.211                       | 0.100         | 0.074         |
| Total detritus weight         |                       | 0.494                       | 0.437         | 0.394         |



Catches in drift nets fished at the Six Mile Point low impact site, March 1979. [Macroinvertebrate and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station<br>number             | Component<br>of catch | Dates and hours nets fished |               |               |
|-------------------------------|-----------------------|-----------------------------|---------------|---------------|
|                               |                       | 3/13-14                     | 3/14          | 3/17-18       |
|                               |                       | 1615-<br>1130               | 1130-<br>1700 | 1400-<br>0915 |
| <u>Macroinvertebrates</u>     |                       |                             |               |               |
| 17                            | <u>Corixidae</u>      | 0                           | 1             | 0             |
|                               | <u>Lirceus</u>        | 1                           | 0             | 0             |
| 19                            | <u>Amnicola</u>       | 1                           | 0             | 0             |
|                               | <u>Mysis relicta</u>  | 3                           | 0             | 2             |
| 20                            | <u>Physa</u>          | 0                           | 1             | 0             |
|                               | <u>Mysis relicta</u>  | 1                           | 0             | 1             |
|                               | <u>Isonychia</u>      | 0                           | 0             | 1             |
| Total macroinvertebrate catch |                       | 6                           | 2             | 4             |
| <u>Macrophytes</u>            |                       |                             |               |               |
| 17                            |                       | 21.32                       | 83.32         | 0             |
| 19                            |                       | 0                           | 14.12         | 0             |
| 20                            |                       | 25.98                       | 5.48          | 0             |
| Total macrophyte catch        |                       | 47.30                       | 102.92        | 0             |
| <u>Detritus</u>               |                       |                             |               |               |
| 17                            |                       | 0.085                       | 0.269         | 0.407         |
| 19                            |                       | 0.459                       | 1.453         | 0.238         |
| 20                            |                       | 1.172                       | 1.738         | 0.833         |
| Total detritus weight         |                       | 1.716                       | 3.460         | 1.478         |

Appendix 3. Record of vessel passage made through the St. Marys River  
for January 16-19, February 13-19, March 11-18, and April 18-21,  
1979.

Catches in drift nets fished at the Six Mile Point high impact site, April 1979. [Macroinvertebrates and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station<br>number             | Component<br>of catch | Dates and hours nets fished |           |
|-------------------------------|-----------------------|-----------------------------|-----------|
|                               |                       | 4/21                        |           |
|                               |                       | 1400-1600                   | 1600-1800 |
| <u>Macroinvertebrates</u>     |                       |                             |           |
| 12                            |                       | 0                           | 0         |
| 14                            |                       | 0                           | 0         |
| 15                            |                       | 0                           | 0         |
| Total macroinvertebrate catch |                       | 0                           | 0         |
| <u>Macrophytes</u>            |                       |                             |           |
| 12                            |                       | 1.44                        | 82.20     |
| 14                            |                       | 0                           | 0         |
| 15                            |                       | 0                           | 0         |
| Total macrophyte catch        |                       | 1.44                        | 82.20     |
| <u>Detritus</u>               |                       |                             |           |
| 12                            |                       | 3.655                       | 0.109     |
| 14                            |                       | 0                           | 0         |
| 15                            |                       | 1.164                       | 0.675     |
| Total detritus weight         |                       | 4.819                       | 0.784     |

Catches in drift nets fished at the Six Mile Point low impact site, April 1979. [Macroinvertebrates and fish catches are shown in numbers of individuals; macrophyte catch is plant material surface area in cm<sup>2</sup>; detritus is dry weight in grams.]

| Station number                | Component of catch | Dates and hours nets fished |           |
|-------------------------------|--------------------|-----------------------------|-----------|
|                               |                    | 4/21                        |           |
|                               |                    | 1430-1630                   | 1630-1830 |
| <u>Macroinvertebrates</u>     |                    |                             |           |
| 17                            |                    | 0                           | 0         |
| 19                            | <u>Amnicola</u>    | 0                           | 1         |
|                               | <u>Lirceus</u>     | 0                           | 1         |
|                               | Chironomidae       | 0                           | 1         |
| 20                            |                    | 0                           | 0         |
| Total macroinvertebrate catch |                    | 0                           | 3         |
| <u>Macrophytes</u>            |                    |                             |           |
| 17                            |                    | 0                           | 0         |
| 19                            |                    | 0                           | 10.58     |
| 20                            |                    | 0                           | 0         |
| Total macrophyte catch        |                    | 0                           | 10.58     |
| <u>Detritus</u>               |                    |                             |           |
| 17                            |                    | 0                           | 0         |
| 19                            |                    | 0.071                       | 0.308     |
| 20                            |                    | 0.050                       | 0.009     |
| Total detritus weight         |                    | 0.121                       | 0.317     |

Record of vessel passage made through the St. Marys River for January 16-19, February 13-19, March 11-18, and April 18-21, 1979. [U.S. Coast Guard Radio Log data provided by telephone, July 16, 1979, by QM 1C, K. Andrea, U.S. Coast Guard Station, Sault Ste. Marie, Michigan; (a) estimate provided by K. Andrea; (b) data from Alger, 1979.]

| Date | Vessel Name        | Direction | Date reported<br>reaching Nine<br>Mile Point | Date and Time<br>vessel estimated (a)/<br>observed (b) reaching<br>study area |                    |
|------|--------------------|-----------|--|---|--------------------|
|      |                    |           |  | Date  | Time               |
| 1/16 | Presque Isle       | upbound   | 22:29  |   |                    |
|      | A.M. Anderson      | upbound   | 22:46  |   |                    |
|      | A.H. Ferbert       | upbound   | 23:35  |   |                    |
| 1/17 | W. Cohen           | upbound   | 17:28  |   |                    |
| 2/15 | P.R. Clarke        | upbound   | 23:11  | 2/16  | 12:50 <sup>b</sup> |
|      | C.J. Callaway      | upbound   | 23:25  | 2/16  | 13:04 <sup>b</sup> |
| 2/16 | J.G. Munson        | upbound   | 09:39  | 2/16  | 13:28 <sup>b</sup> |
| 3/11 | A.M. Anderson      | upbound   | 13:14  | 3/13  | 09:00 <sup>a</sup> |
|      | P.R. Clarke        | upbound   | 13:23  | 3/13  | 09:15 <sup>a</sup> |
| 3/14 | Imperial St. Clair | upbound   | 10:20  | 3/14  | 11:02 <sup>b</sup> |
|      | C.J. Callaway      | downbound | 10:46  |   |                    |
|      | R. Blough          | downbound | 16:26  |   |                    |
| 3/18 | Imperial St. Clair | downbound | 06:23  |   |                    |
|      | C.J. Callaway      | upbound   | 18:30  |   |                    |
|      | R. Blough          | upbound   | 23:12  |   |                    |
| 4/18 | R. Blough          | downbound | 09:00  |   |                    |
|      | C.J. Callaway      | downbound | 09:53  |   |                    |
|      | Fort Chambly       | downbound | 10:21  |   |                    |
|      | J. Dykstra         | downbound | 10:56  |   |                    |
|      | E.R. Breach        | downbound | 12:23  |   |                    |
| 4/19 | Bai Como II        | upbound   | 22:34  |   |                    |
|      | G.A. Stinson       | upbound   | 23:02  |   |                    |
|      | C.M. White         | downbound | 02:07  |   |                    |
|      | Sharon             | downbound | 04:14  |   |                    |
|      | Tadoussaz          | downbound | 09:53  |   |                    |
|      | P.D. Block         | downbound | 15:22  |   |                    |
|      | J.N. McWaters      | downbound | 20:35  |   |                    |
|      | J.O. McKellar      | downbound | 22:14  |   |                    |

Table continued

| Date | Vessel Name         | Direction | Date reported<br>reaching Nine<br>Mile Point | Date and Time<br>vessel estimated (a)/<br>observed (b) reaching<br>study area |      |
|------|---------------------|-----------|--|---|------|
|      |                     |           |  | Date  | Time |
| 4/19 | E.L. Ryerson        | upbound   | 23:45  |   |      |
| 4/20 | Quedock             | upbound   | 04:00  |   |      |
|      | A.M. Anderson       | upbound   | 05:00  |   |      |
|      | A.H. Ferbert        | upbound   | 14:18  |   |      |
|      | Senniville          | upbound   | 15:11  |   |      |
|      | E.D. Barber         | upbound   | 16:01  |   |      |
|      | R. Indiana          | upbound   | 16:35  |   |      |
|      | Federal St. Laurent | upbound   | 17:12  |   |      |
|      | Texaco Warrior      | upbound   | 19:20  |   |      |
|      | Elton Hoyt          | upbound   | 23:02  |   |      |
|      | Quetico             | upbound   | 23:03  |   |      |
|      | Armco               | downbound | 00:45  |   |      |
|      | G.L. Mauthe         | downbound | 01:50  |   |      |
|      | West Run            | downbound | 10:54  |   |      |
|      | C. Victory          | downbound | 07:51  |   |      |
|      | Hochelaga           | downbound | 14:21  |   |      |
|      | L.R. Desmarais      | downbound | 15:25  |   |      |
|      | Doan Transport      | downbound | 14:44  |   |      |
|      | Canadock            | downbound | 16:29  |   |      |
|      | E.B. Green          | downbound | 21:19  |   |      |
| 4/21 | P. Thayer           | upbound   | 04:13  |   |      |
|      | W.R. Roesch         | upbound   | 06:29  |   |      |
|      | M. Miner            | upbound   | 09:41  |   |      |
|      | Lake Shell          | upbound   | 13:36  |   |      |
|      | C. Callaway         | upbound   | 13:48  |   |      |
|      | E.R. Breach         | upbound   | 14:25  |   |      |
|      | Georgian Bay        | upbound   | 20:44  |   |      |
|      | E.L. Block          | downbound | 06:25  |   |      |
|      | Elgo Soo            | downbound | 07:10  |   |      |

Table continued

| Date | Vessel Name       | Direction | Date reported<br>reaching Nine<br>Mile Point | Date and Time<br>vessel estimated (a)/<br>observed (b) reaching<br>study area |      |
|------|-------------------|-----------|--|---|------|
|      |                   |           |  | Date  | Time |
| 4/21 | Sir J. Dunn       | downbound | 07:57  |   |      |
|      | Fort York         | downbound | 08:45  |   |      |
|      | Elgo Indiana      | downbound | 10:50  |   |      |
|      | Murray Bay        | downbound | 15:10  |   |      |
|      | A.M. Glossbrennen | downbound | 16:20  |   |      |
|      | Simco             | downbound | 17:41  |   |      |

Appendix 4. Incident light (in foot-candles) measured with a submarine photometer at the surface, middle, and bottom at Frechette Point and Six Mile Point, February 16-April 21, 1979.



Incident light (in foot-candles) measured with a submarine photometer at the surface, middle, and bottom at Frechette Point and Six Mile Point, February 16-April 21, 1979. The last column (%) is light measured at the bottom expressed as a percentage of light measured at mid depth in the water column. [Ice thickness not measured (a); broken floe ice only (b).]

| Date              | Station | Station depth (m) | Time (hours) | Ice thickness (cm) | Incident light (foot-candles) |        |        | %    |
|-------------------|---------|-------------------|--------------|--------------------|-------------------------------|--------|--------|------|
|                   |         |                   |              |                    | Surface                       | Middle | Bottom |      |
| 2/16              | 7a      | 1                 | 1310         | 46                 | 5,000                         | 2,800  | 440    | 15.7 |
|                   |         |                   | 1330         | 46                 | 1,200                         | 370    | 80     | 21.6 |
|                   | 7c      | 1                 | 1310         | 46                 | 1,000                         | 400    | 70     | 17.5 |
|                   |         |                   | 1330         | 46                 | 5,800                         | 800    | 300    | 37.5 |
|                   | 7d      | 1                 | 1310         | 46                 | 1,200                         | 290    | 42     | 14.5 |
|                   |         |                   | 1330         | 46                 | 1,200                         | 410    | 83     | 20.2 |
| 3/18              | 2       | 1                 | 1500         | 38                 | 370                           | 140    | 65     | 46.4 |
|                   | 4       | 2                 | 1500         | 30                 | 320                           | 52     | 35     | 67.3 |
|                   | 5       | 3                 | 1500         | 24                 | 350                           | 110    | 52     | 47.3 |
|                   | 7       | 1                 | 1445         | 61                 | 430                           | 170    | 60     | 35.3 |
|                   | 9       | 2                 | 1445         | 41                 | 370                           | 80     | 45     | 56.2 |
|                   | 10      | 3                 | 1445         | 27                 | 480                           | 120    | 66     | 55.0 |
|                   | 12      | 1                 | 1415         | 51                 | 580                           | 250    | 64     | 25.6 |
|                   | 14      | 2                 | 1415         | 52                 | 450                           | 73     | 50     | 68.5 |
|                   | 15      | 3                 | 1415         | 46                 | 560                           | 84     | 42     | 50.0 |
|                   | 17      | 1                 | 1400         | a                  | 740                           | 180    | 60     | 33.3 |
|                   | 19      | 2                 | 1400         | a                  | 760                           | 110    | 50     | 45.4 |
|                   | 20      | 3                 | 1400         | a                  | 930                           | 130    | 49     | 37.7 |
| 4/21 <sup>b</sup> | 2       | 1                 | 1100         |                    | 540                           | 260    | 190    | 73.1 |
|                   |         |                   | 1300         |                    | 1,700                         | 1,200  | 710    | 59.2 |
|                   |         |                   | 1500         |                    | 760                           | 580    | 290    | 50.0 |
|                   |         |                   | 1700         |                    | 540                           | 390    | 210    | 53.8 |
|                   | 4       | 2                 | 1100         |                    | 530                           | 420    | 250    | 59.5 |
|                   |         |                   | 1300         |                    | 2,500                         | 910    | 500    | 54.9 |
|                   |         |                   | 1500         |                    | 820                           | 370    | 290    | 78.4 |
|                   |         |                   | 1700         |                    | 480                           | 290    | 170    | 58.6 |
|                   | 5       | 3                 | 1100         |                    | 570                           | 120    | 52     | 43.3 |
|                   |         |                   | 1300         |                    | 2,000                         | 330    | 160    | 48.5 |
|                   |         |                   | 1500         |                    | 730                           | 190    | 77     | 40.5 |
|                   |         |                   | 1700         |                    | 530                           | 140    | 30     | 21.4 |
|                   | 9       | 2                 | 1330         |                    | 1,300                         | 550    | 420    | 76.4 |
|                   |         |                   | 1530         |                    | 1,900                         | 870    | 640    | 73.6 |
|                   |         |                   | 1730         |                    | 330                           | 210    | 120    | 57.1 |
|                   | 12      | 1                 | 1600         |                    | 1,100                         | 170    | 25     | 14.7 |
|                   |         |                   | 1800         |                    | 210                           | 39     | 8      | 20.5 |
|                   | 14      | 2                 | 1600         |                    | 1,200                         | 320    | 130    | 40.6 |
|                   | 15      | 3                 | 1600         |                    | 940                           | 360    | 150    | 41.7 |
|                   |         |                   | 1800         |                    | 190                           | 72     | 21     | 29.1 |
|                   | 17      | 1                 | 1630         |                    | 950                           | 190    | 43     | 22.6 |
|                   |         |                   | 1830         |                    | 140                           | 4      | 3      | 75.0 |
|                   | 19      | 2                 | 1630         |                    | 840                           | 420    | 270    | 64.3 |
|                   |         |                   | 1830         |                    | 140                           | 54     | 47     | 87.0 |
|                   | 20      | 3                 | 1630         |                    | 1,400                         | 390    | 250    | 64.1 |
|                   |         |                   | 1830         |                    | 220                           | 52     | 36     | 69.2 |

Appendix 5. Fishing effort and catch at Frechette Point and Six Mile Point in the St. Marys River, January 16-April 21, 1979. [Each lift at a station represents one piece of gear fished overnight for one night; two traps were fished at station 4 on March 17 and April 20.]

Fishing effort and catch at Frechette Point and Six Mile Point in the St. Marys River, January 16 - April 21, 1979. [Each lift at a station represents one piece of gear fished overnight for one night; two traps were fished at station 4 on March 17 and April 20.]

| Date gear<br>lifted | Station | Gear     | Species                         | Catch |   |
|---------------------|---------|----------|---------------------------------|-------|---|
|                     |         |          |                                 | #     | Total length (cm)   |
| Jan. 16             | 14      | Gillnet  | --                              | 0     | -   |
|                     | 19      | Gillnet  | white sucker                    | 1     | 34  |
| Feb. 14             | 9       | Fyke net | --                              | 0     | -   |
| Feb. 16             | 14      | Fyke net | white sucker                    | 6     | 35,36,38,40,43,50   |
| March 15            | 14      | Fyke net | white sucker                    | 2     | 43,44   |
| March 16            | 9       | Fyke net | --                              | 0     | -   |
|                     | 14      | Fyke net | white sucker                    | 1     | 44  |
|                     | 19      | Fyke net | white sucker                    | 5     | 39,40,45,46,46  |
| March 17            | 9       | Fyke net | --                              | 0     | -   |
|                     | 14      | Fyke net | white sucker                    | 2     | 43,43   |
|                     | 19      | Fyke net | burbot                          | 1     | 67  |
|                     |         |          | white sucker                    | 1     | 45  |
|                     | 4       | Trap     | sculpin<br>( <u>Cottus</u> sp.) | 4     | -   |
| April 18            | 9       | Fyke net | --                              | 0     | -   |
|                     | 14      | Fyke net | white sucker                    | 7     | 37,40,41,41,42,43,<br>44  |
|                     |         |          | yellow perch                    | 1     | 32  |
|                     | 19      | Fyke net | lake herring                    | 1     | 39  |
|                     |         |          | northern pike                   | 1     | 56  |
|                     |         |          | white sucker                    | 7     | 38,39,41,44,45,45,<br>46  |
|                     |         |          | longnose sucker                 | 1     | 41  |
| April 19            | 4       | Fyke net | white sucker                    | 18    | 36,38,39,39,39,41,<br>41,42,43,43,43,<br>43,44,45,46,46,<br>48,48 |
|                     |         |          | yellow perch                    | 1     | 31  |
|                     | 9       | Fyke net | burbot                          | 3     | 66,74,76  |
|                     |         |          | white sucker                    | 3     | 43,46,48  |
|                     | 14      | Fyke net | white sucker                    | 1     | 42  |
|                     | 19      | Fyke net | burbot                          | 1     | 86  |
|                     |         |          | lake herring                    | 1     | 18  |
|                     |         |          |                                 |       |   |
| April 20            | 4       | Fyke net | white sucker                    | 2     | 41,44   |
|                     |         | Trap     | ninespine                       |       |   |
|                     |         |          | stickleback                     | 1     | -   |
|                     |         |          | sculpin<br>( <u>Cottus</u> sp.) | 1     | -   |

Appendix 6. Comments received on draft report circulated for review  
on August 6, 1979, by the Great Lakes Basin Commission.

# COMMONWEALTH of PENNSYLVANIA



DEPARTMENT OF ENVIRONMENTAL RESOURCES  
POST OFFICE BOX 1467  
HARRISBURG, PENNSYLVANIA 17120

In reply refer to  
RM-R  
F 110:7

August 16, 1979

David A. Gregorka, Administrative Director  
Great Lakes Basin Commission  
P. O. Box 999  
3475 Plymouth Road  
Ann Arbor, Michigan 48106

Dear Mr. Gregorka:

This is in response to your August 6, 1979, request for comments on the two draft reports that are a part of the Environmental Evaluation Work Group FY 1979 Studies of the Winter Navigation Demonstration Program. The drafts are entitled as follows:

1. "Effects of Ship-Induced Waves in an Ice Environment on the St. Marys River Ecosystem"
2. "Environmental Monitoring Plan"

Regarding the first draft, we suggest that the following be added as Item 10 to the Executive Summary on pages i-ii:

"The report describes and summarizes field observations only. It neither endorses nor implies any conclusions from these observations. Before reliable and valid conclusions can be drawn, more detailed field work must be made to support any hypotheses that may be generated by the report."

Regarding the second draft, the report needs a recommendation as to its application since funding of the monitoring plan is discouraged. We feel that the outlined plan would make an excellent reference in the EAGLE program.

Sincerely,

*John E. M. Sparrow for VM13*  
V. M. Beard, Director  
Bureau of Resources Programming